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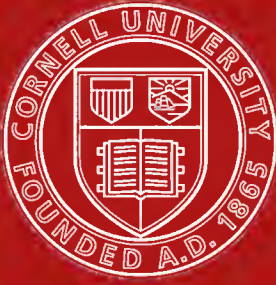
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THE ST. LOUIS EXHIBITION, 1904.

BY

H. PHILLIPS FLETCHER,

FELLOW OF THE ROYAL INSTITUTE OF BRITISH ARCHITECTS; FELLOW
OF THE SURVEYORS' INSTITUTION; ASSOCIATE MEMBER OF THE
INSTITUTION OF CIVIL ENGINEERS; BARRISTER-AT-LAW OF THE MIDDLE
TEMPLE; GODWIN BURSAR, 1904; LATELY LECTURER ON THE STAFF
OF KING'S COLLEGE, LONDON; JOINT AUTHOR OF THE FOLLOW-
ING TEXT-BOOKS:—"ARCHITECTURAL HYGIENE," "ARBITRATIONS,"
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PREFACE.

THE following particulars of the Great "World's Fair" held at St. Louis, 1904, may be of interest, especially to organisers, architects and others who may be engaged upon the planning and construction of future exhibitions. In addition, it may perhaps appeal to that public who are interested in observing these milestones in the progress of humanity.

Each of these International Exhibitions, from 1851 onwards, marks in its own particular way an era of progress, whether of art, science, education or construction.

It seems strange that in this, by far the greatest Exhibition that ever has been or probably ever will be held, the skilful architects and engineers amongst our Transatlantic kinsmen should have reverted to the original material of construction first utilised by man, namely, that of—timber.

H. PHILLIPS FLETCHER.

29, NEW BRIDGE STREET,
LUDGATE CIRCUS, E.C.
March, 1905.

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THE ST. LOUIS EXHIBITION 1904.

I.—INTRODUCTION.

THIS Exhibition was held to commemorate the purchase by the United States of the Louisiana Territory. The Republic paid Napoleon the Great fifteen million dollars for approximately one million square miles. Such an area may perhaps be best brought before our minds by imagining for one moment the combined area of Great Britain, France, Germany, Italy, and Spain. One hundred years after the event, the price appears more than reasonable ; but it was not so considered at the time, and Josiah Quincy declared that the Bill authorising the purchase would justify a revolution.

A glance at the accompanying map will show the effect that this purchase had upon the territorial aspect of the States ; and this investment was the commencement of that policy which culminated in the acquisition of all land between the Atlantic and the Pacific Oceans.

This purchase, probably the largest transaction in freehold land ever carried through, added the greater part of twelve states and two territories to the Union, and the valuation for assessment of the same in 1900 was 6,616,642,829 dollars, or over one thousand three hundred and twenty millions sterling.

The area of the Exhibition grounds was over twelve hundred and forty acres, which means that it was twice the size of any previous exhibition ever held. The Chicago Exhibition in 1893 covered some six hundred acres.

It is, indeed, difficult to grasp the extent of this mammoth creation ; but perhaps some inkling of its size may be gleaned from the fact that its superficies is greater than the total areas occupied by the Chicago, the Paris, and the Buffalo Exhibitions combined. Two miles long and one mile in width were the official measurements. There were thirty-five miles of asphalted and gravelled roadways.

The total cost of the Exhibition, as computed by the authorities, was some fifty million dollars, or over ten millions sterling ; and this, of course, did not include the cost of the buildings of foreign countries. Fifty of the latter exhibited in the various sections, and forty-four States participated in this World's Fair.

One could continue for many chapters giving data relating to the vast extent of this enterprise ; but one's desire is only to give the reader roughly some idea of the scope of the undertaking before discussing the planning and the principal buildings.

It is only perhaps just, however, to mention that Great Britain was by no means unworthily represented, and it would appear that something approximating to one hundred and fifty thousand sterling was available for forwarding British interests. This is by far the largest amount that has ever been set aside for such a purpose outside our own country. It is a matter for congratulation to know that, as at the Chicago Exhibition, the British section was the only one that was ready in all its departments upon the opening day. Even four months from the opening of the Exhibition work was still being done on some of the buildings belonging to foreign countries.



FIG. 1.—MAP SHOWING TERRITORY OF LOUISIANA AS PURCHASED IN 1803.

[To face page 2.

FIG. 2.—PLAN OF THE ST. LOUIS EXHIBITION.

II.—THE GENERAL PLAN, ETC.

WHEN the Exhibition was first decided upon and the preliminary Government grant obtained, a committee of well-known American architects was formed, and at length a scheme was devised which, considering the general contour of the ground, could not, perhaps, have been improved upon; though upon one's first visits it did appear that the *motif* was not comprehensive enough, and that it would have been better had the original plan embraced the *whole* or the greater part of the building operations, and not merely the principal buildings for the display of the exhibits.

The completed plan is shown in illustration No. 2.

The fact that land was continually being added as demands arose accounts to a large extent for its apparently disjointed appearance; but the latter is more apparent than real, because with a compass there was no difficulty in finding one's way about the Exhibition, provided that one was in a condition to endure the enormous physical strain involved thereby.

A reference to the plan will show that the focal point from which the main avenues to the principal buildings radiate was the Festival Hall, which latter was situated upon a hill. It will be observed that the hall was connected to eastern and western pavilions by a colonnade, the latter being ingeniously used by Mr. E. L. Masqueray (the chief of design) to enclose the beautiful groups of statuary representing the fourteen States in the Louisiana purchase. The Festival Hall, therefore, and the Colonnade of States, terminating with pavilions used for restaurants, formed the *clou* of the plan, the main avenues radiating northwards from

these fixed points. The transverse avenues running east and west gave the general outline of eight of the principal buildings of the exposition, the grand basin and lagoons being appropriately placed as shown on the plan.

It will be observed that the northern and southern façades of the Education, Manufactures, Electricity and Varied Industries buildings had a very decided break on plan about their central axes. It will be interesting later on to note how the various architects endeavoured to overcome this defect. It was originally intended to have a wide sweep instead of this broken line on plan ; but the enormous expense of the circular work occasioned thereby was so prohibitive that it was abandoned.

The chief feature, then, was the central Festival Hall, designed by Mr. Cass Gilbert, of New York. The two decorative pavilions were placed on each side and within the axes of the main avenues, and were connected to the Festival Hall by the Colonnade of States. The latter was formed of semicircles, in each of which was placed a large statue representing each of the States included in the purchase. This is clearly shown in the accompanying illustration (Fig. 3), which also shows the three cascades that carried some 90,000 gallons of water per minute to the main basin, which latter is 600 ft. in diameter. The central cascade was designed by Mr. Masqueray, as was the Fountain of Liberty, and it was crowned by allegorical figures ; while the western cascade represented the Pacific Ocean, and the eastern one that of the Atlantic.

On the level ground below, on the Plaza of St. Louis, the monument commemorating the purchase was erected, and this consisted of a shaft 100 ft. in height, which was crowned by a statue of "Peace" heralding other nations to friendly rivalry (Fig. 4). On either side were allegorical figures representing the Missouri and Mississippi rivers, which have had considerable

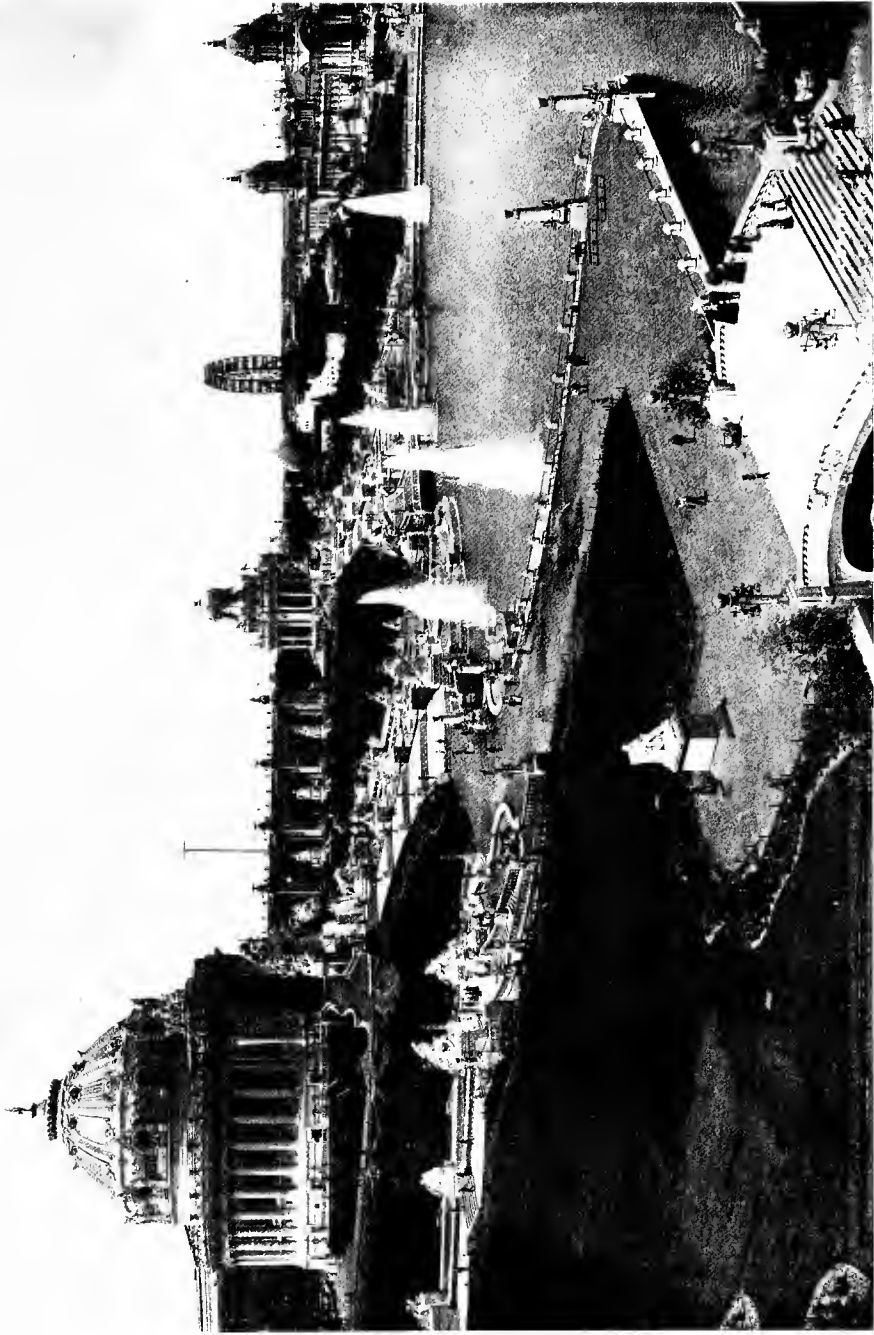
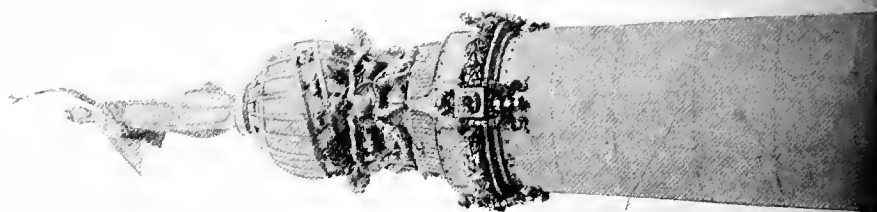


FIG. 3.—VIEW FROM THE EAST OF FESTIVAL HALL.

[To face page 6.]



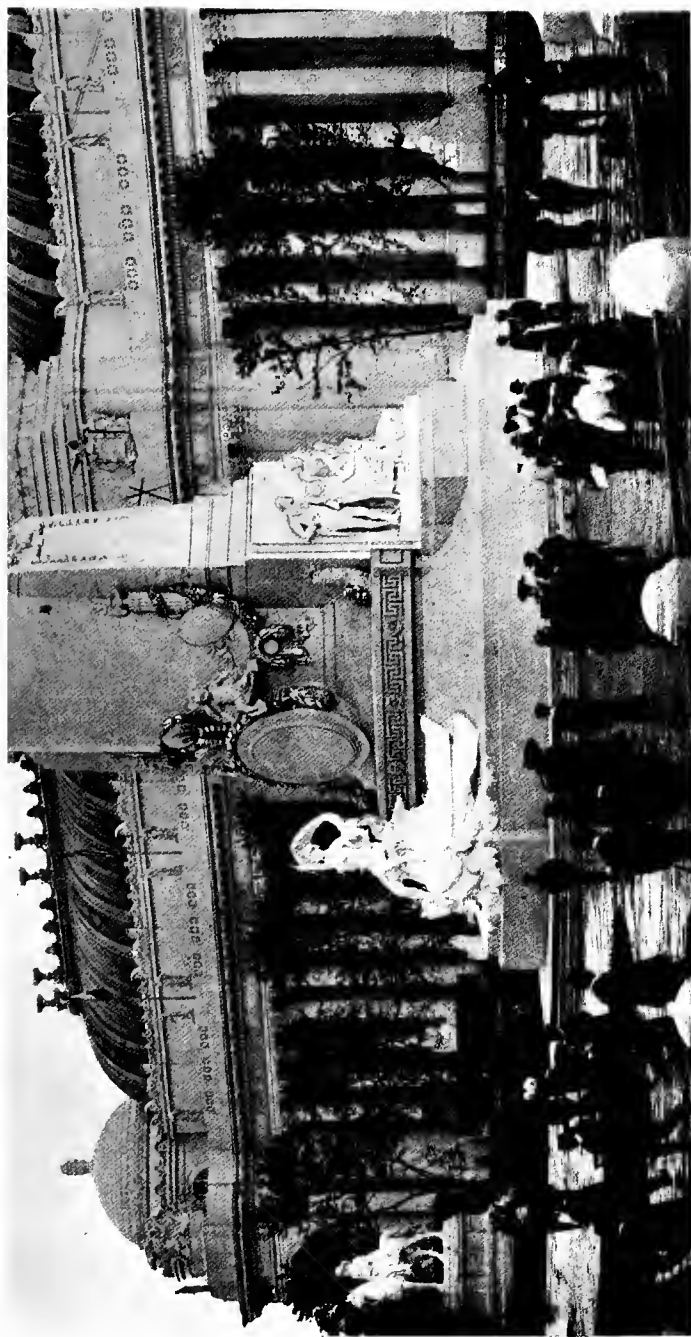


FIG. 4.—THE LOUISIANA PURCHASE MONUMENT.

[To face page 6.]

influence in the development of the Louisiana territory. Upon the south side was a group, as shown in the illustration, representing the Signing of the Treaty by American and French Commissioners.

The bridges, one of which is seen in the foreground of the illustration, were also conceived by the chief of design, who was responsible for the architectural detail relating to the laying-out of the Exhibition, with the exception of the buildings to be enumerated hereafter. These bridges were placed at different locations connecting the entrances of the buildings, and their design was simple, effective, and pleasing. Their open balustrade terminated in massive pedestals carrying decorative flagstaffs.

The statuary, which was placed at appropriate positions on the plan, was remarkable for its breadth and feeling, and will doubtless continue to foster that strong popularity for sculpture allied to architecture which was engendered by the Chicago Exhibition of 1893.

The commission of architects was originally composed of representatives from nine of the leading American firms, and to each member of the commission the design of one large building was assigned. Mr. Isaac S. Taylor was chairman of the commission, and he subsequently was appointed director of works, being thus responsible for the erection of the buildings. The architects supplied drawings for each of the façades of the various structures, but were not responsible for the construction or the supervision. Mr. E. L. Masqueray was chief of design, Mr. Weatherwax was chief draughtsman, and Mr. P. J. Markmann was the mechanical engineer of the division of works.

Owing partly to the then congested state of the steel market, and partly in order to save expense, it was decided to erect all the buildings under the control of the division of works in timber. Thus we have an entirely new state of affairs to that which existed

both at Chicago in 1893 and at Paris in 1900. Mr. Markmann estimates that from 30 to 50 per cent. was thus economised.

It is customary in the United States, when steel work is employed, for the contractor to supply the working drawings for the supervising architect or engineer to check and approve. No such custom prevails with regard to timber construction. The immense amount of work, therefore, that fell upon the division of works may well be imagined, and as one wandered through their plan rooms and saw so many thousands of drawings all prepared in their office, one was struck by the marvellous feat that the staff performed in getting all the work done in the comparatively short space of two-and-a-half years.

It was stated that only some forty draughtsmen were employed at the most, which is a smaller number than at any of the other great exhibitions. Fortunately, from an architect's point of view, the money for ceiling the buildings was not forthcoming, and consequently most of the construction was visible from below.

A factor of safety of 4 was generally employed in the calculations ; and this can scarcely be considered too high when one realises the stresses to which the buildings were liable to be subjected.

All the buildings were faced with fibrous plastering for the decorative work, this being technically called "staff" in the United States. One cannot help wishing that at least one architect had tried to erect one building in half-timbered work. The eye was constantly wearied by the glare of these stucco palaces—beautiful and scholarly designs it may be true, but if only one had essayed to break through the precedent set at Chicago he would have earned the gratitude of many thoughtful architects. An effort to build in truth would surely have brought its own reward. As it was, the buildings, of course, had great

educational value, though they were, after all, only full-sized plaster models.

In an exhibition of this vast nature there must necessarily be a large amount of room for criticism. For instance, a model city was erected to the north-east of the Manufactures' Building, but the roadway was anything but model. Moreover, an automobile-charging station was placed next to the hospital, and the noise therefrom was not conducive to the comfort of the indisposed inmates. The station, moreover, had not been properly completed, and from the model road one saw the bare unplastered laths.

One must, however, take the Exhibition as a whole, and one is bound to admit that, while it was a subject for abounding criticism, it was vastly successful from an educational standpoint, and it was the greatest undertaking of its kind that has ever been held. And, owing to the loss of money that was invested, an experiment on a similar scale in the future is not likely to be attempted.

III.—THE ENGINEERING WORK, ETC.

BEFORE discussing the various buildings of the Exhibition, it will perhaps be of interest to note some of the engineering work that was carried out so as to render the erection of the buildings possible.

SITE.—In December, 1901, the site consisted mainly of a heavy clay soil well afforested, through which a stream known as the "Des Peres" found its way. An artificial lake also occupied the sites of the Mining, Liberal Arts, and Manufactures buildings. A variation in height of some 130 ft. occurred between the hills and dales.

In order to grade the valleys and lower the hills some two million cubic yards of earth had to be moved. The lake had to be piled for the erection of the buildings above mentioned, and the treacherous "Des Peres" was confined in a box conduit 15 ft. deep by 45 ft. wide. Much of the forest had to be cut down, and many large trees were transplanted to other parts of the grounds. A lagoon about two miles in length, and of a depth of not less than 4 ft., was constructed around the main buildings, as shown on the plan.

After the general plan of the Fair had been decided upon, the civil engineer, Mr. Phillips, commenced his topographical survey of the ground. It was marked out in 1,000 ft. squares, which were later divided into 50 ft. squares, and readings were noted at each intersection and at additional points that governed the contour.

The largest maps used for plotting these results were of a scale of 50 ft. to the inch. Monthly progress maps were prepared,

so that at any time the condition and progress of any erection of the work could be ascertained.

WATER SUPPLY. — Two entirely independent systems were installed. One was a low-pressure system connected to the city mains, and the other was a high-pressure system operated by fourteen pumps installed upon the exhibition grounds. The high-pressure hydrants in the buildings had $2\frac{1}{2}$ in. nozzles, and externally had 4-in. steamer - nozzles. In addition there were sprinkler systems in many of the buildings.

THE CASCADES AND LAGOONS were built of timber, the central cascade being designed for a flow of 55,000 gallons per minute. The water from the lagoons returned through a wooden conduit from the grand basin to the pump-room under the east cascade, where the hydraulic and electrical plants were installed.

PAVEMENTS. — Broken stone and gravel roads were more used than any others, and much burnt ballast was used for finishing. Some asphaltting was also used in various parts of the grounds. All kerbing throughout was constructed of oak, 10 in. by 3 in. in thickness. Maple-trees were successfully planted along the main avenues.

SEWERAGE AND DRAINAGE. — There were three systems of sewerage, viz., the small one installed for the use of the buildings of the Washington University, a few stray sewers that were on the grounds and had been built by the holders of speculative real estate plots, and the main sewerage scheme devised by the exhibition authorities. There were some nine miles of 8 in. vitrified pipe sewers, and about one mile and a quarter of brick sewers. The main system was collected into a tank near the Mines Building, from which it was pumped into the city sewerage scheme. The excreta from the building was carried in steel pipes, and all plumbing was in accordance with the St. Louis regulations. The

surface drainage was collected in wooden catch-pits, the storm-water passing from the latter through earthenware pipes to covered timber drains which discharged into valleys outside the grounds. The trenches for the larger sewers were made by sewer-digging machines controlled by traction-engines.

BRIDGES.—These were constructed on a standard plan consisting of a simple arch system of 3 in. by 14 in. timbers for the top and bottom chords, with a solid web of two courses of 2 in. by 12 in. planking. At the centre, where the head room for passing boats, &c., did not allow of the use of this truss, 3 in. by 16 in. joists were substituted, and were skilfully connected to the main trusses.

RAILWAYS.—The works department were responsible for the extension of three railway systems into the grounds during the period of construction. They also were responsible for the temporary tracks laid down during construction for the use of contractors, etc. The track of the intramural railroad, some thirteen miles in length, was also laid under the direction of the chief civil engineer, and this work included the construction of the trestle bridges for the heavy freight traffic. The cars of this intramural railroad were a distinct improvement upon the usual American type. They had no steps, the station platforms being on a level with the floors of the cars.

POWER.—The boiler-house was immediately west of the Machinery Hall, and contained sixteen Babcock and Wilcox water-tube boilers of 450 h.p. each. They were equipped with Poney stokers, and forced draught was used by the aid of fans 14 ft. in diameter. There were also eight Heine water-tube boilers of 400 h.p. each, and three Cahall water-tube boilers of similar capacity. All the boilers had the ashes removed and the coal supplied by the link belt machinery system of conveyors. The

steam mains were carried through a tunnel to the machinery building. Four Westinghouse - Corliss compound engines were operated thereby, two of them being connected to general electric alternators of 2,000 kilowatts each, and two to Westinghouse alternators of similar capacity. The current was delivered direct to the distributing mains through a switchboard. The mains were run in wooden tunnels to the various buildings, in each of which was a station with transformers, and rotary converters were necessary. The buildings were outlined with incandescent lamps of 8 c.p., while the cascades were illuminated with a specially- designed and effective scheme.

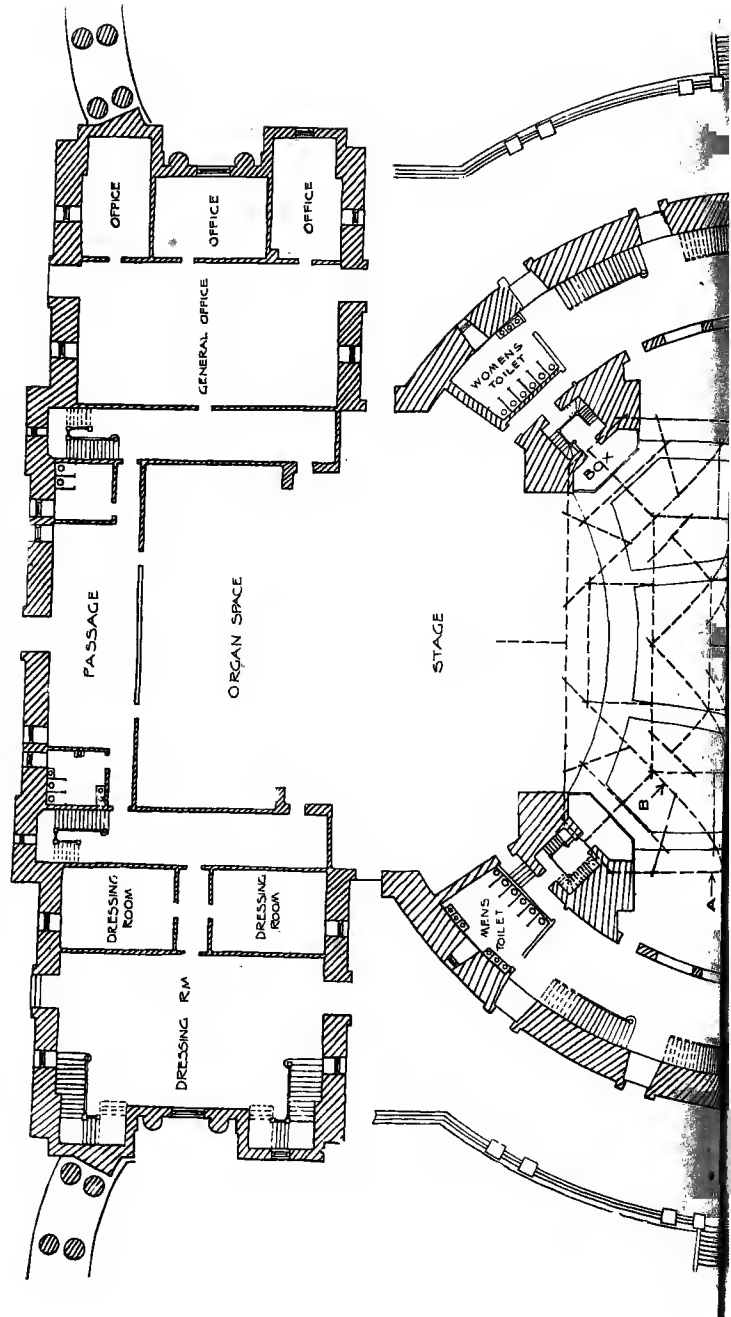
REFUSE DESTRUCTORS were provided to the north-west of the grounds, where garbage and combustible *débris* were destroyed. The streets and buildings were swept at night, and all but combustible material was deposited in shoots in the western portion of the grounds.

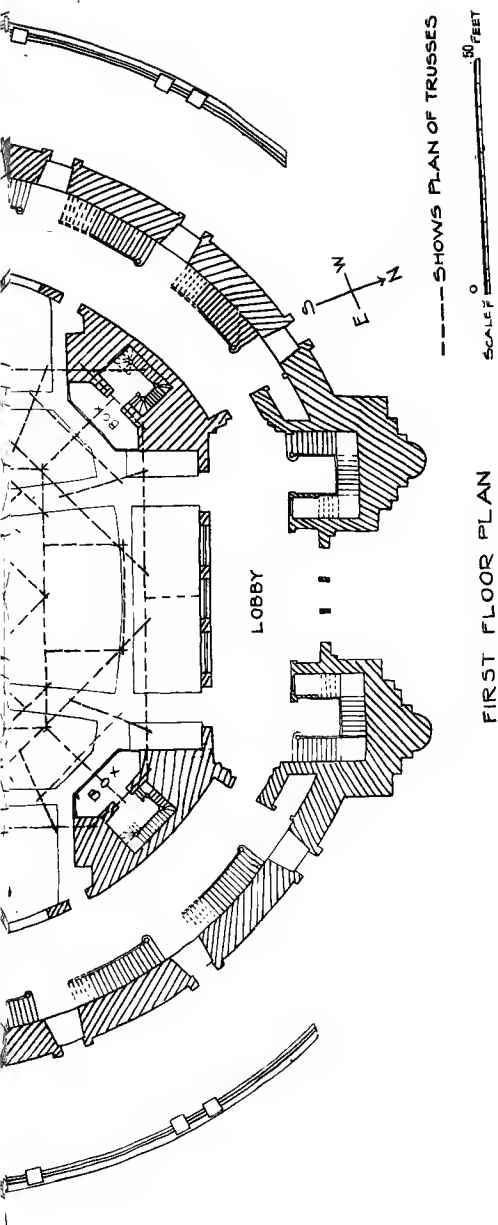
IV.—THE FESTIVAL HALL AND COLONNADE OF STATES.

HAVING dealt briefly with the plan and the engineering work involved thereby, we will now consider a few of the principal buildings erected at the "Fair," and, naturally, we shall first consider the central features which govern the plan. Reference to the illustrations 2 and 3, before given, makes it evident that the Festival Hall and Colonnades completely obliterated the permanent Fine Arts Buildings to the south of the same. This was in many respects to be regretted; but, under the peculiar circumstances that existed, perhaps it was unavoidable.

Mr. Cass Gilbert, the architect both of the Festival Hall and of the Fine Arts Buildings, said that the original intention was to erect both in fire-resisting materials; but owing to the impossibility of carrying this work out in the time at the disposal of the Division of Works, this idea was abandoned. The scheme for the Colonnade of States was dropped for a time, during which the plans for the Arts Buildings were proceeded with, and it was not until these had been completed that it was revived. Mr. Cass Gilbert then, with that irony of fate from which even American architects are not immune, was instructed to prepare a design for the Festival Hall which would conceal his own permanent Arts Buildings. It will have been seen from illustration No. 3 how ably he followed out his instructions.

Illustration No. 5 is a plan taken at the first-floor level. It was claimed that the dome was the largest "on earth," but its internal diameter was only 90 ft., whereas of course that of





FIRST FLOOR PLAN

FIG. 5.—FESTIVAL HALL.

[To face page 14.]

St. Peter's at Rome has a diameter of some 137 ft. 6 in., and that of St. Paul's, London, approximates to 109 ft., while the Pantheon at Rome is 142 ft. 6 in. Nevertheless, externally the effect was very impressive; and this hall was wonderfully well adapted for the purpose for which it was designed—viz., for large organ recitals. Mr. Masqueray, the chief of design, was responsible for the internal work, and the Division of Works in its various departments carried out the construction. As this was all executed in timber, it involved considerable skill and many calculations.

It will be seen from the plan (No. 5) that the framing for the domes was carried by four pairs of columns, which latter formed the angles of a square. Each column was built up of timbers 8 in. by 8 in., which were strengthened by cross-braces of 2 in. by 10 in. They rose some 80 ft. above the floor level, and supported

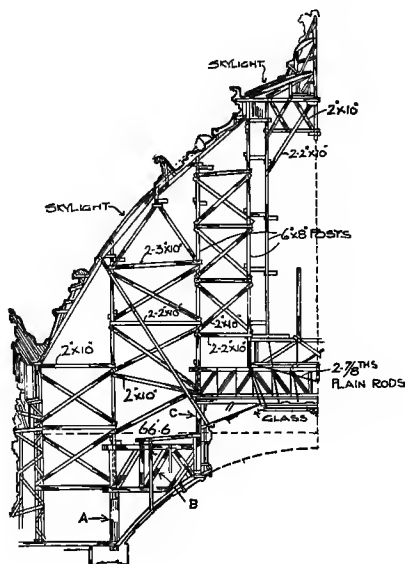


FIG. 6.—FRAMING IN THE DOME OF FESTIVAL HALL.

the trusses marked A shown on the diagrams. Four other trusses, marked B, were laid diagonally across these main trusses, and others, marked C, were in turn built across the latter. This is clearly shown in the diagram No. 6, which is a sketch section showing the method of the framing employed.

The main walls of the building were carried by pairs of 8 in. by 8 in. posts braced together as above described. The balcony

was of cantilever construction, and projected about 27 ft. from the face of the columns.

It may be of interest to state that in the calculations of Mr. Philip Markmann, who was the chief mechanical engineer to the Building Department, 20 lb. wind-pressure was allowed for ; 30 lb. dead load was assumed on the roof rafters, and 40 lb. was allowed on the trusses ; 1,800 lb. in tension and bending was allowed for the working stress on yellow pine.

Part of the Festival Hall and many of the other buildings had to be erected upon pile foundations, owing to the difficulty of treating the bed of the Des Peres river previously mentioned, and to the existence of the lake, and also owing to the treacherous nature of the ground in other positions. Some of the piles were as much as 30 ft. in length. Internally the treatment was very simple, and the effect of the large dome and lantern was not hampered by meretricious ornament.

The internal wall of the promenade had semi-circular-headed openings. As shown on the plan, the south bay was used for the stage and the organ, which latter is supposed to be the largest ever constructed, the keyboard being operated from the platform. The piers were skilfully constructed so as to contain tiers of boxes. The seating accommodation was devised to hold 3,500 people. Tip-up seats were used on the ground floor and for the first four rows of the gallery. Ordinary chairs were used for the last six rows of the latter.

The inclination of the floor of the auditorium was about 1 in 5, while the tiers of the gallery had a rise of some 16 in., with a horizontal measurement of 2 ft. 6 in. An excellent view of the stage was thus obtainable from every seat.

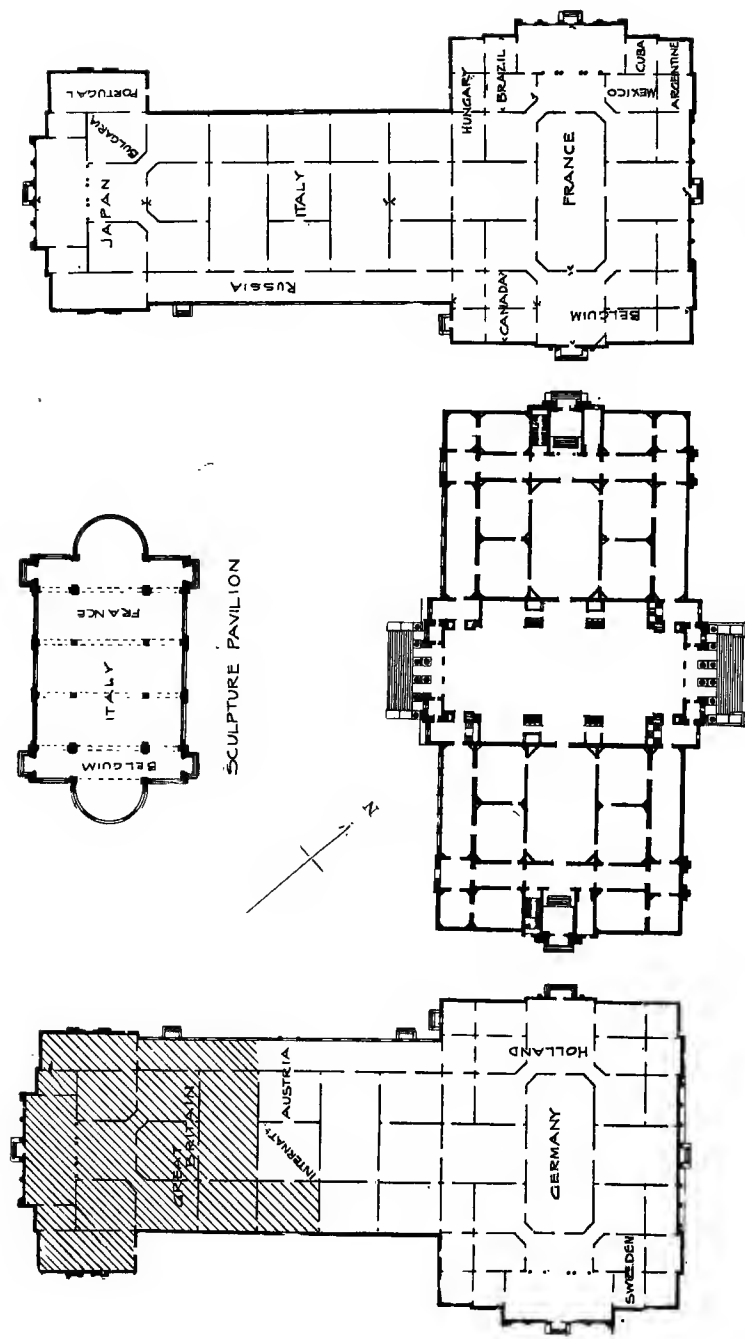
As will be seen from illustration No. 3, the exterior of the building was very ornate, as no doubt was fitting for the *clou* of

the exhibition. The engaged Ionic columns round the drum were well modelled, and the bull's-eye openings in the storey above were very effective in the distance, though they certainly appeared a little obtrusive when viewed from a near standpoint. The junction of the drum with the cascade was perhaps not quite so happy as it might have been, and the finely-modelled statuary which surmounted the same seemed rather to crush the colonnade, though the columns were some 43 ft. in height.

THE COLONNADE OF STATES AND THE CASCADES.—Reference to illustrations Nos. 2 and 3 will show that an ornamental screen of Ionic columns formed the background for fourteen statues—seven to the east and seven to the west of the Festival Hall, each statue being symbolical of one of the States or Territories of the Louisiana purchase. At the extremity of each of these wings were circular restaurant pavilions, also with Ionic columns round their drums. The designs of the colonnade and of the pavilions were intrusted to Mr. E. L. Masqueray, and he succeeded in producing a most satisfactory *ensemble*, as may be gathered from the illustration. The only criticisms, perhaps, that he laid himself open to are that the pavilions might possibly have been more connected to the colonnades, which were formed of hemi-cycles. From some parts of the grounds one sees an ugly gap between them. The swags, moreover, between the columns had a somewhat detached appearance. The three big cascades in front of the Festival Hall and the pavilions were very effective, and were claimed to be the largest in the world, while the lawns, walks, and approaches were all in harmony with the scheme. The statues which ornamented the approaches to the cascades represented men celebrated in American History, and included such characters as Joliet, Laclede, Robert Livingston, James Monroe, and Franklin. The side cascades were designed to symbolise the Atlantic and Pacific Oceans as representing the

eastern and western boundaries of the United States. At the head of the main cascade was an enormous statue of Liberty raising the veil of Ignorance and protecting Truth and Justice. The three cascades were each approximately some 300 ft. in length. They were illuminated at night with three sets of incandescent lamps, which were varied at will from white to red and green.

The placing of the Louisiana Monument immediately to the north of the Grand Basin on the Plaza St. Louis was, perhaps, a mistake, as it interrupted the view of the Festival Hall and the cascades in rather an annoying manner. It would have looked well near one of the rather mean-looking entrances to the Exhibition.



EAST PAVILION

WEST PAVILION

FIG. 7.—PLAN OF FINE ARTS BUILDINGS.

[To face page 19.]

V.—THE FINE ARTS BUILDINGS.

As mentioned at the commencement of the last chapter, this is a permanent structure with regard to its central building, and it was designed by Mr. Cass Gilbert. Illustration No. 7 is a plan showing the buildings of this Art section, and the central one is that designed to be ultimately handed over to the city as an art museum.

As previously explained, these buildings were not in the main picture of the exhibition scheme, but were situated on the verge of the forest. The buildings differ in one essential from those erected both at Chicago and Paris. All the exhibits were placed upon the ground floor, none of the buildings having any galleries. As will be seen from the plan, they were divided into four separate structures. The main and permanent building is 340 ft. long and 160 ft. wide, and was separated from its annexes by open courts. This separation performed a double purpose, as it enabled Mr. Gilbert to design the four façades of the building, and this isolation formed an effective barrier in case of fire.

The departmental authorities laid stress upon the observation of four conditions—viz., adequate lighting, efficient ventilation, facilities for circulation of many visitors, and the best fire-resisting qualities in materials used.

The main building was occupied entirely by exhibits from the United States. A large hall extends through the centre, running north and south. It is covered internally by a large barrel vault cased with marble laid in a herring-bone pattern, and is intersected by a clerestory of semicircular windows to the east and west. This

is clearly shown with regard to the east side in illustration No. 8. A similar window is also placed in both the north and south walls above the external Corinthian order.

As will be seen from illustration No. 7, this hall is divided longitudinally into three bays, each of which is arched over and pierced at its summit by a circular light.

The piers form recesses which are used for storage, &c. The walls internally are built of hard yellow bricks 12 in. long by $1\frac{3}{4}$ in. in depth. The basement of this hall was used for the heating and ventilating apparatus; it also contained jury-rooms, committee-rooms, and lavatories, &c.

East and west of the hall are the side galleries of the permanent building as shown on the plan. These are lighted by skylights in an approved manner, and have staircases at their extremities leading to studios, offices and workrooms.

Externally the building has been treated with buff brickwork and limestone, and the severe treatment was in admirable contrast with the temporary Festival Hall immediately to the north of it. There are no windows to the façade below the cornice level. The Corinthian porticoes to the north and south elevations, with their admirably executed sculpture typifying the different periods of art, and the niches with their Ionic columns and pediments, will be a fitting and permanent monument of the exhibition long years after the temporary staff buildings had been handed over to the wreckers.

The temporary annexes to the east and west were of brickwork and "staff," and were designed by Mr. E. L. Masqueray. They were each 422 ft. long by 200 ft. wide. They were of one storey, and were well lighted by skylights. The hatched portion shows that occupied by the British Section, which was almost an ideal of what an art exhibition should be; all the pictures being in a good

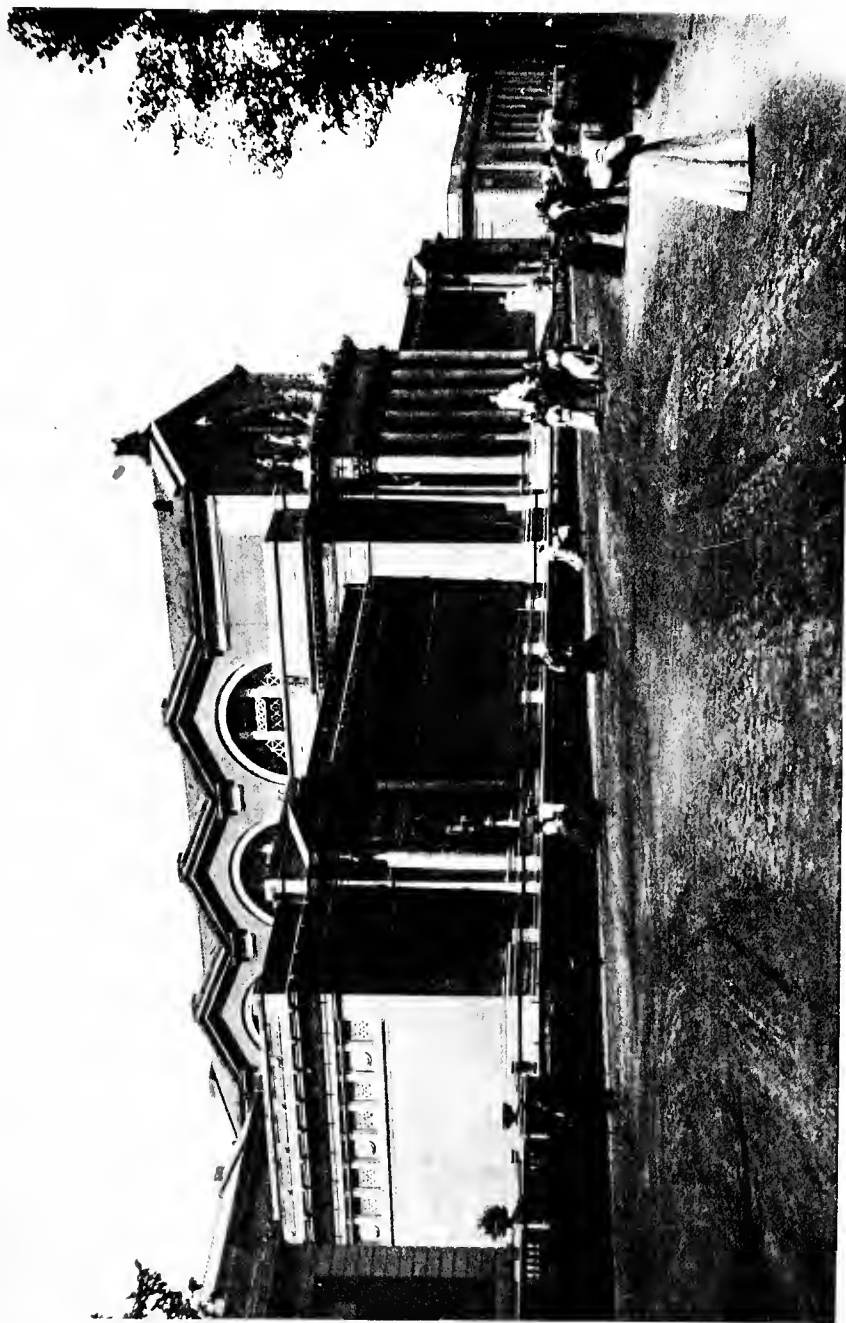


FIG. 8.—THE FINE ARTS BUILDINGS

[To face page 20.]

light, and excellently labelled with the subject and name of the artist, so that one need not be worried by continual reference to the catalogue.

The inner walls were, as regards their base, of brickwork, above which they were of a solid timber construction.

To the south of the main building was the Sculpture Pavilion, which was of similar construction, and was also designed in the office of the Director of Works. This was a simple building, 200 ft. by 100 ft. on plan. Mr. Masqueray said that his main object was to build a well-lighted exhibition-room to shelter the masterpieces of the sculptors of international reputation, and he well succeeded in his object. The extremities of the building were terminated in hemi-cycles, which features, both inside and outside, were taken advantage of to the fullest extent by the architect.

The four buildings constituting the Art Division were placed on a well-designed terrace surrounded by a Classic balustrade. The total cost of this group of buildings exceeded one million dollars.

VI.—THE UNITED STATES GOVERNMENT BUILDING.

THIS building, as shown upon the illustration No. 2, was situated to the east of the Mines and Liberal Arts Buildings, and closed up, as it were, this extremity of the scheme developed for the main buildings. The architect was Mr. James Knox Taylor, supervising architect to the Treasury. This structure was remarkable for the fact that it was the only one that was supervised throughout by the architect who designed it, the contractor being under his immediate supervision. It was also the only one of the principal buildings that had the steel arch construction, and consequently the only one free of constructive columns internally. After many visits to the Exhibition, one is constrained to admit that it was one of the most restful-looking buildings upon the grounds. It had the advantage of being raised some 50 ft. above the level of the other main Exhibit buildings; and the approach through the well-laid-out sunken garden to the west, though robbing the building of something of its length, certainly added to its dignity.

As will be seen from illustration No. 9, the plan was simple and symmetrical, except that the colonnade of the west front was not repeated to the east front. The building was 750 ft. long by some 250 ft. in width, and had an internal floor area of some 150,000 sq. ft.

Access to the Central Pavilion was obtained by means of a flight of steps 100 ft. in width. In the centre of this flight of steps access was given to an inclined plane running north and

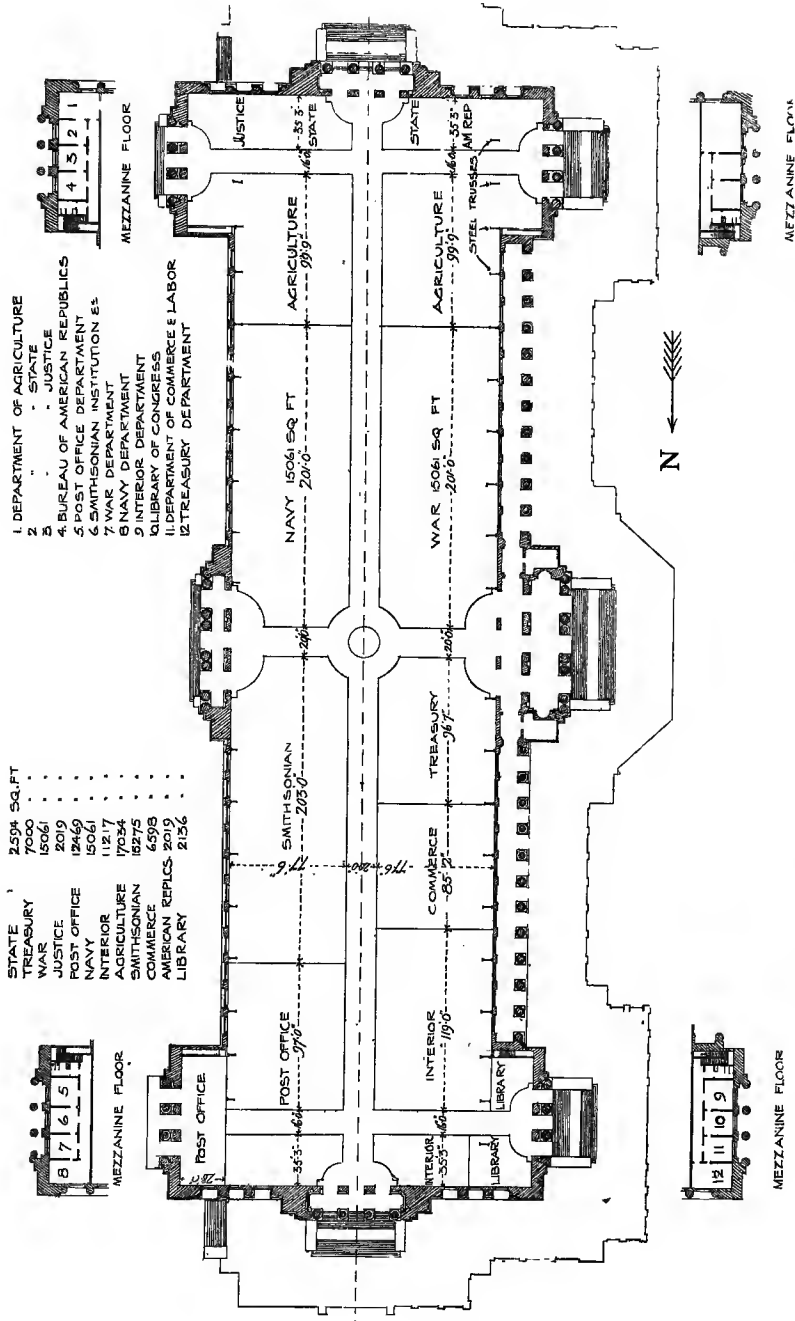


FIG. 9.—MAIN EXHIBITION BUILDING, UNITED STATES GOVERNMENT.

THE UNITED STATES GOVERNMENT BUILDING. 25

south, which conducted to the steps to these entrances. Internally the construction was of the steel-arched truss type so familiar at the Chicago and Paris exhibitions.

Illustration No. 10 shows a sketch section of this building from west to east. One feature perhaps a little unusual was that, owing to the projecting porticoes to the north and south of the east and west fronts, the main trusses stood out clear from the

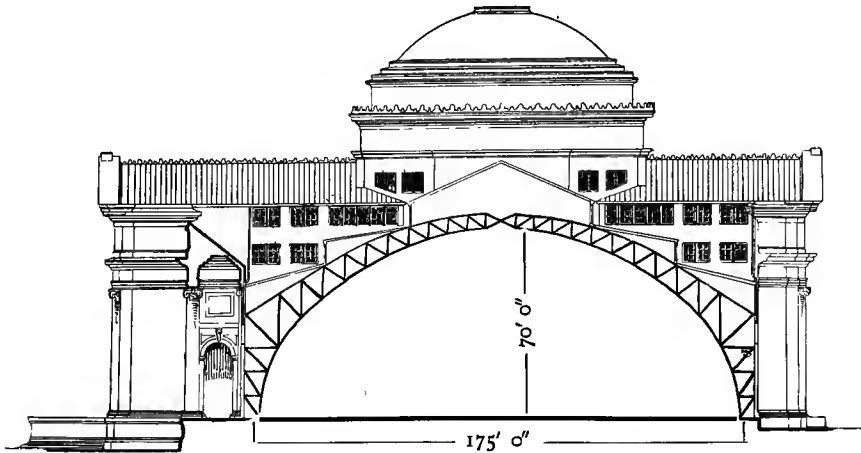


FIG. 10.—SECTION OF UNITED STATES GOVERNMENT BUILDING.

walls at these points. This gave rather a curious effect when entering the building from the side entrances. The steel trusses had a span of 175 ft., were 35 ft. centre to centre, and were 70 ft. in height. As shown in Fig. 10 the lighting was entirely by clerestories. The trusses were painted red, while the woodwork which lined the interior was of a green tint. This perhaps rendered the building a little less light than could be desired.

Externally, the Ionic order was employed, and the central portion of the western façade, with the colonnade on either side, formed a sheltered ambulatory, 520 ft. long by 20 ft. wide, from

which a good view of the Exposition could be obtained. The coupled columns to the central pavilions added importance to the building, and the domes over these features were happily designed from the *motif* of that employed at the Pantheon at Rome, thus symbolising the lasting qualities upon which the constitution of the United States is based. The dome was surmounted by a fine modelled quadriga, the top of which was 173 ft. above the ground.

The introduction of the figure sculpture into the Attic surmounting the Ionic order is open to criticism, as the former being some 15 ft. in height, had a somewhat stilted appearance, and detracted perhaps from the otherwise solid appearance of the façades.

This building was considerably more restrained than most of the others which surrounded it, and its breadth of treatment and purity of detail were very refreshing. The approximate cost of the steel-work was 103,000 dollars, and the total cost was about 350,000 dollars.

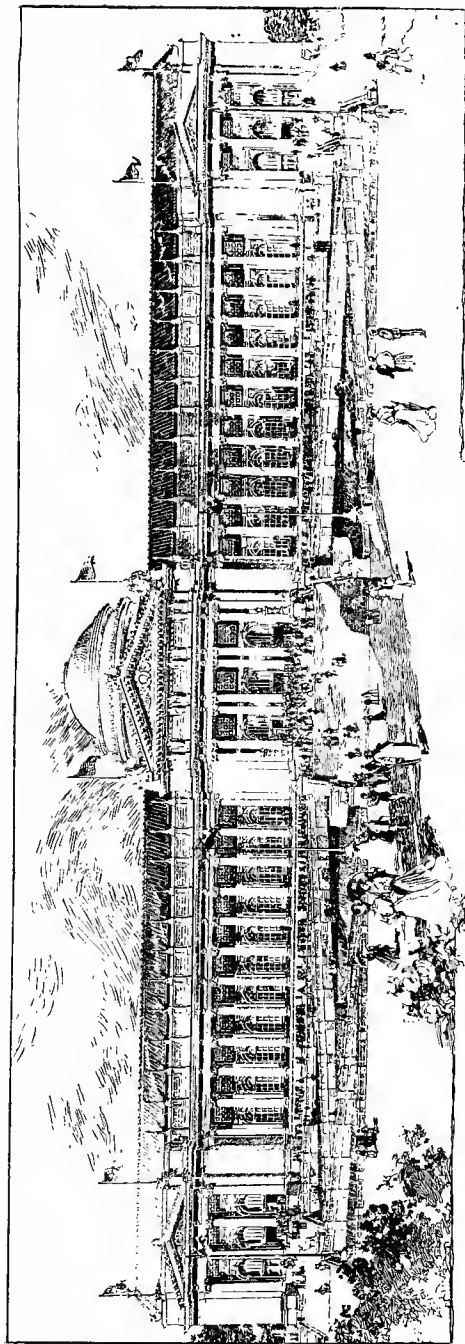


FIG. 11.—THE UNITED STATES' GOVERNMENT BUILDING.

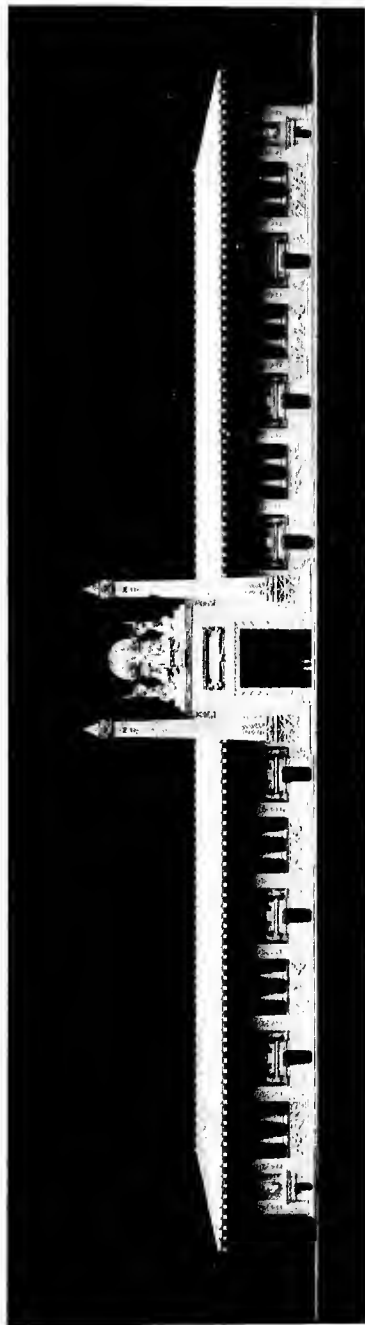


FIG. 15.—THE MINES AND METALLURGICAL BUILDING.

for the design of the wooden framing of this building, as it was typical of the construction throughout, and therefore we need not refer to it again.

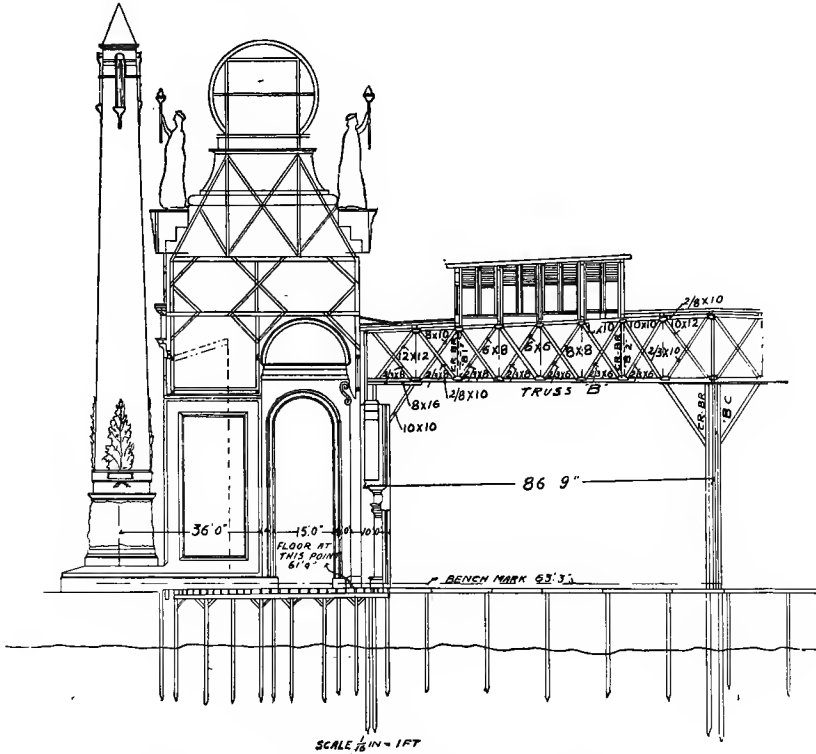


FIG. 13.—SECTION THROUGH MINES AND METALLURGY.

Longleaf yellow pine was used generally throughout. The following formula for posts was used—

$$\frac{1,400}{2 + \frac{L^2}{550 D^2}} = \text{safe centre load in pounds per square inch.}$$

where $\frac{L}{D}$ = ratio of length to least side of section.

augers worked by compressed air, and the certainty of a uniformity for all keys, justified the adoption of the methods used.

Reference to Fig. 13 will make it clear that this building was top-lighted by large lantern lights or "monitors," as they are called in the States. This cannot be seen in Fig. 15, as the red-tiled roof to the loggia cuts off the view of the monitors behind.

With regard to the design of this building, it certainly cannot be said to lack originality. The enormous obelisks to the north and west fronts have rather the appearance of being jammed up against the main building. This was due, however, to the exigencies of the site. Had space but permitted their being placed more forward, additional dignity would have accrued to these façades.

Mr. Link had in his mind the great quarrying feats performed by the Egyptians in the work of these monoliths. Hence his idea for their appropriateness for this particular building. The low-pitched overhanging roofs, with their vitreous covering, sheltered the building from the summer sun, and, aided by the loggia mentioned above, materially helped to render it one of the coolest in the grounds. Mr. Link cut himself loose from the Classical forms adopted by the other architects at the Exhibition. The decorated massive piers had capitals derived from the Ionic. Small columns—Byzantine in feeling—rested upon a low screen wall between the piers. The sculpture to these walls added immensely to the scheme of the design, and they carried out the architect's intention of expressing the purpose of the building. Over the central entrances were finely modelled figures surrounding a globe supported by smaller figures. This, in place of the orthodox dome, was quite refreshing. The view, however, was obstructed from most points by the upper parts of the pylons. At the corners were entrances supporting upright figures representing the various

branches of mining and metallurgy. Had the original plan of metallic façades been carried out, it would have added greatly to the effect of this building.

The critics have had a good deal to say about this building, so it occurred to one to ask Mr. Link to write a few words about it, and he was courteous enough to give the following :—

“The Palace of Mines and Metallurgy is 525 ft. by 750 ft., and has an exhibition space of about 275,000 sq. ft. The interior is divided into eight oblong parts. The lighting is so arranged that each one of the eight divisions receives abundant vertical side-light from the top, so that no horizontal skylights would be necessary directly over any part of the exhibition spaces. It forms a part of the east wing of the general plan, and is the last building on the south side of the esplanade leading to the group of Government buildings, which stand on a higher level. The style of the building has been the subject of much discussion and speculation. It has been styled Egyptian on account of the obelisks, and ‘New Art’ because no prototype can be discovered for it. When I, its author, am appealed to for a definition, I am as much at a loss to assign it to any of the recognised classifications as are its critics. You may call it ‘Secession’ architecture, if that means anything to you. To the modern architect it means liberty, emancipation from conventionality in design, and individuality. It tries to be more an architecture of feeling than of formulæ. I can give, however, the reasoning upon which its design was based, for it must be understood that it has been somewhat changed from the original. For instance, that which was intended by the author has not been carried out, and its original purpose and location were also changed after the design had been accepted. The original location, which brought the main façade facing south, is responsible for the projecting roof and the recessed arcades, which were at one time alike

on all four sides. They were to give the building the inviting aspect of coolness which is always suggested by deep shadow lines. The pylons which emphasise the main entrance assumed the shape of obelisks, because the latter, to me, symbolise the most remarkable feat of mining (quarrying) of antiquity. Considered as a building for the purpose of housing exhibits, it was argued that it should express, externally, as much friendly dignity as may be compatible with its ephemeral character. It appeared to me to be somewhat incongruous, however, to disguise its temporary character in the garb of severe and Classic forms which we associate with the more lasting architectural monuments of antiquity, and that as a part of a great 'show' it undoubtedly should be more striking and full of life. The cost of the building was a little over half a million dollars."

After having viewed this building from many positions on the grounds, one felt thankful to Mr. Link for having produced something that immediately singled it out from its fellows, and thus fixing indelibly in one's mind the purpose for which it was designed.

VIII.—THE LIBERAL ARTS BUILDING.

THIS building was designed by Messrs. Barnett, Haynes, and Barnett, of St. Louis. It had approximately the same dimensions on plan as the Mines Building, discussed in the last chapter. The Corinthian and the Doric orders were used in the façades. The covered loggia, as shown upon the plan, Fig. 16, extended only to the south and western elevations. The style of architecture employed was in the nature of a modified form of Louis XVI. Fig. 17 is a view taken of the north-west corner. It will be seen from the plan that there were three entrances to each of the longer

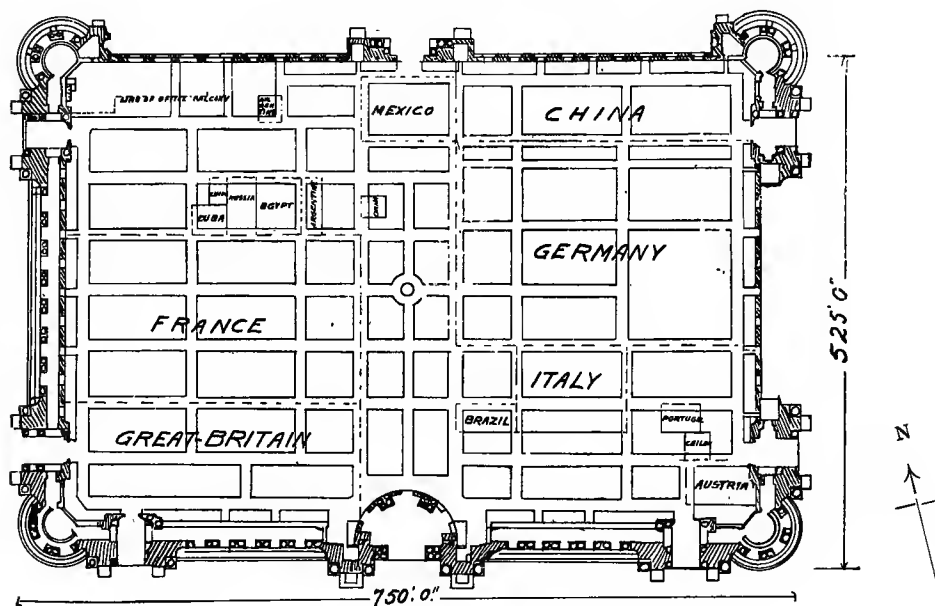


FIG. 16.—THE LIBERAL ARTS BUILDING.

façades. The centre pavilion in each case was raised somewhat above the connecting loggiae that unite it to the pavilions on either side, which latter in their turn also were built higher than the intermediate Doric colonnade. The shorter façades had two entrances, one at each of their extremities. On the screen wall on the interior of the colonnades provision was made for the mural painter; this, however, was simply coloured a Pompeian red, which, while better than nothing, was scarcely the scheme devised by the architects.

As will be seen from the plan, the southern central entrance was in the form of a hemicycle with a circular colonnade, the domed ceiling of which was to have been frescoed on a background of gold, and the decorations and ornamentations were to have been in relief. Unfortunately, this part of the scheme was not carried out.

The architects claim to have endeavoured to be free of any ironclad rules of Classic architecture, and, while adhering in general forms to Classic examples, they treated the masses of the building and their skylines in a manner certainly their own.

The main entrances and corner pavilions were carried up above the common cornice line, and the introduction of the circular-domed colonnades at the angles produced a variety of treatment and an effect of skyline that was perhaps somewhat restless, while at the same time they certainly gave prominence to the entrances. Had these features not been in juxtaposition, as shown in Fig. 17, they might perhaps have been more effective than they were, and they would not then to some people have appeared to be fighting for prominence.

The sculpture above the cornice to the circular Doric colonnades, where it abuts against the angles of the side entrances, was scarcely so happy as that to the remainder of the building.

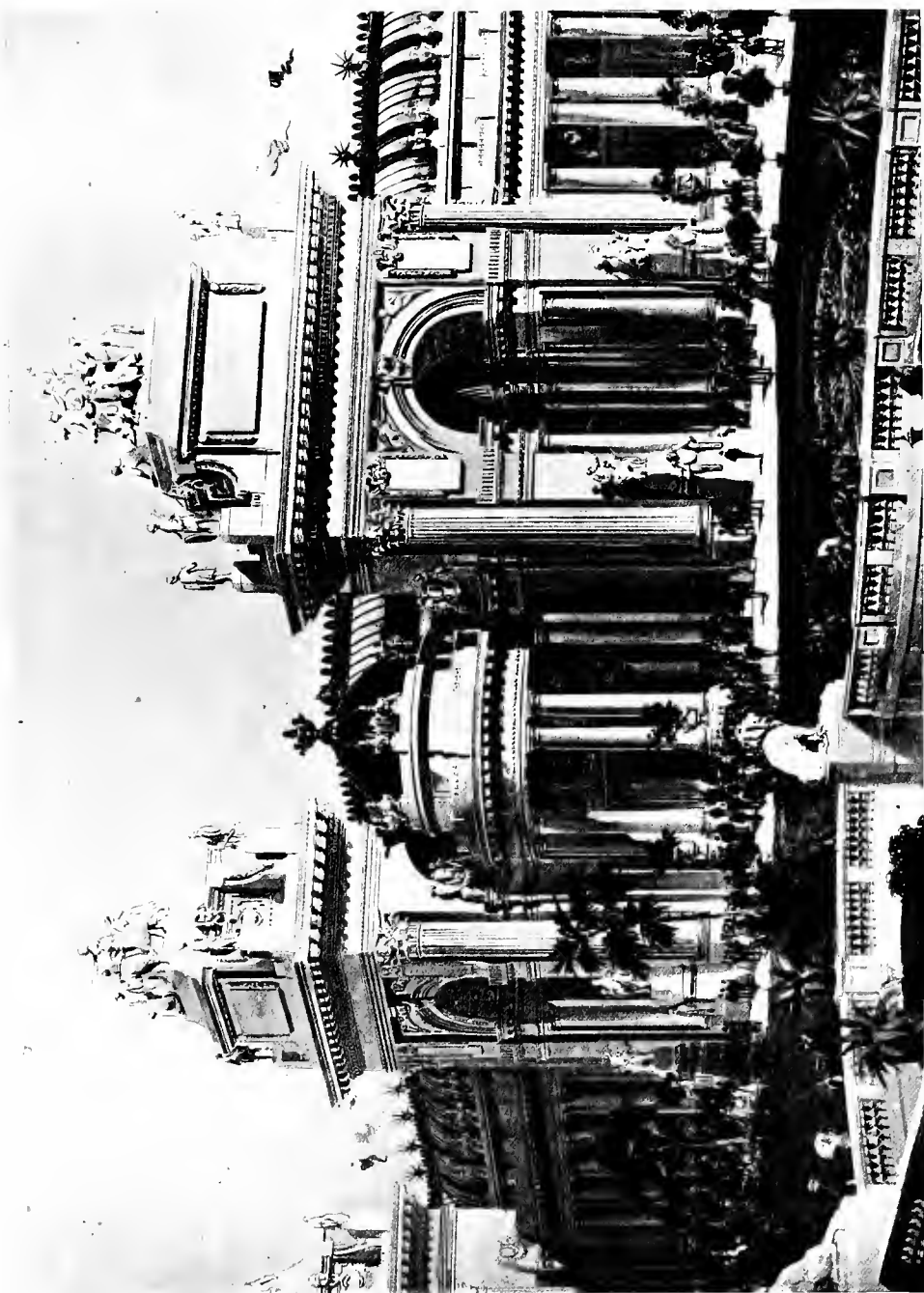


FIG. 17.—CORNER ENTRANCES OF LIBERAL ARTS BUILDING.

[To face page 34.

The idea of the architects not to be hidebound by tradition is undoubtedly worthy of emulation, and one could not at least fail to pick their building out from the rest after having once seen it. The architects had planned a Roman court for the interior, but this shared the fate of the mural decorations, and was cut out owing to lack of funds. The cost of the building was some four hundred and eighty thousand dollars.

IX.—THE EDUCATION BUILDING.

MESSRS. EAMES and YOUNG were the architects of this structure, Mr. Eames being the President of the American Institute of Architects. As will be seen from Fig. 18, the general shape of the plan was in the form of a blunt wedge or keystone. This was the only building for exhibits that had a complete covered loggia on every side. It will be observed upon reference to Fig. 2 that this building occupied one of the most important sites upon the grounds, as it was immediately east of the radial front—viz., the Festival Hall. It was surrounded on all sides by the lagoon, which added immensely to the advantageous aspect of its situation. The area covered was about nine acres in extent.

Fig. 19 is a section showing one bay of the construction of this building, which also illustrates the method of lighting the exhibits. The internal court followed the general outline of the plan, the idea being to lay it out in the form of a *plaisance* or garden of a formal type. The exigencies of space did not permit of this being carried out, and, owing to the numerous exhibits, it was roofed over, and the area used by Great Britain, Germany, France, &c., as shown in Fig. 18. One's experience of these large exhibitions points to the fact that these open courts have been nearly always so used, and in future exhibitions architects will be well advised not to count upon them as an architectural feature.

As will be seen by reference to Fig. 18, the main entrances were upon the axes of the building, and they resembled somewhat the well-known form of the triumphal arch ; the coupled Corinthian

columns on either side of the arched entrances, with the single columns flanking the smaller openings, being effectively placed.

A colonnade, of a very refined type of Corinthian columns, was carried round each face of the building, and these were placed upon plinths 6 ft. 6 in. in height, the latter being in receding unornamented planes. The main walls at the back of the colonnades were decorated with Corinthian pilasters between the windows, the latter being surmounted on the ground storey with alternately triangular and semicircular pediments. The upper ones were rectangular and without ornament. A modelled frieze was carried round at the level of the capitals to the pilasters above mentioned.

The pavilions to the main entrances were surmounted with finely-modelled quadrigas. The corner entrances were treated with coupled pilasters on either side, but were not crowned with statuary.

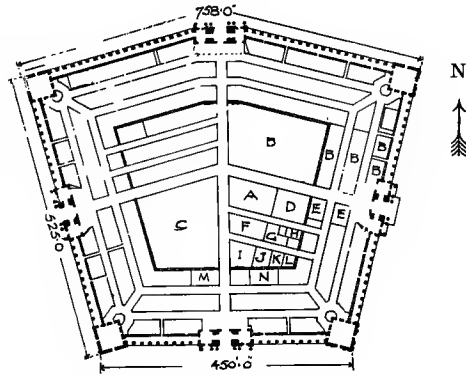


FIG. 18.—EDUCATION BUILDING.

As will be seen from the plan, pedestals for sculpture were designed and erected in front of the entrances; but these were left unoccupied except to the central entrances of the northern and western façades; consequently a somewhat bare appearance resulted. The corner pavilions, moreover, not being surmounted by the customary statuary, also looked somewhat flat.

Full advantage was taken in this design of the powerful effect of the colonnade with the giant columns some 50 ft. in height,

and Messrs. Eames and Young are to be congratulated upon the success of the simplicity and uniformity of their treatment. It was eminently a safe design, and one is bound to admit that it was effective. Had it been raised upon a stylobate of steps it would probably have added to the dignity and importance of the

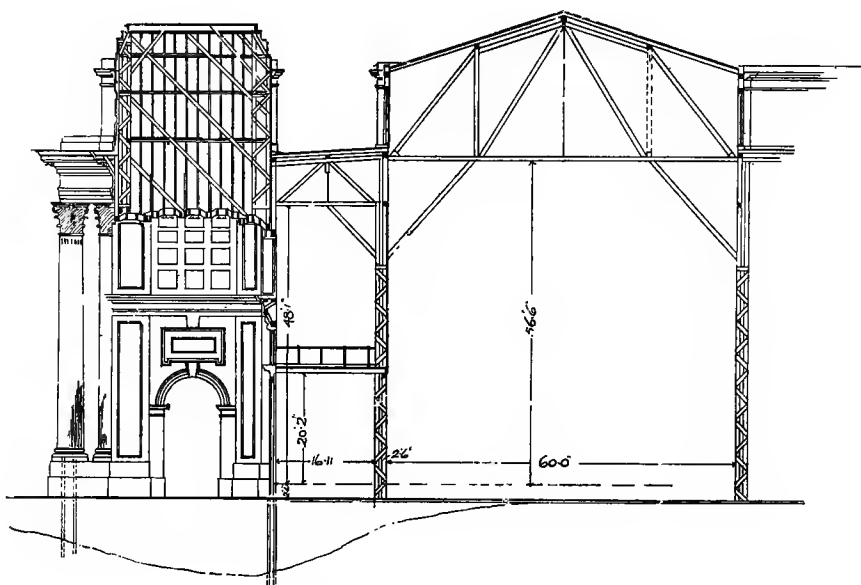


FIG. 19.—EDUCATION BUILDING.

building, especially when looking down upon it from the cascades and the Festival Hall.

The difficulty of the break in the northern façade was overcome by the fact that the plan of the central entrance to this front was kept symmetrical to that of the southern façade, the lines of the colonnade forming an obtuse angle where they abutted—a simple and effective method not adopted by any other architect, as will be seen upon reference to the buildings described hereafter.

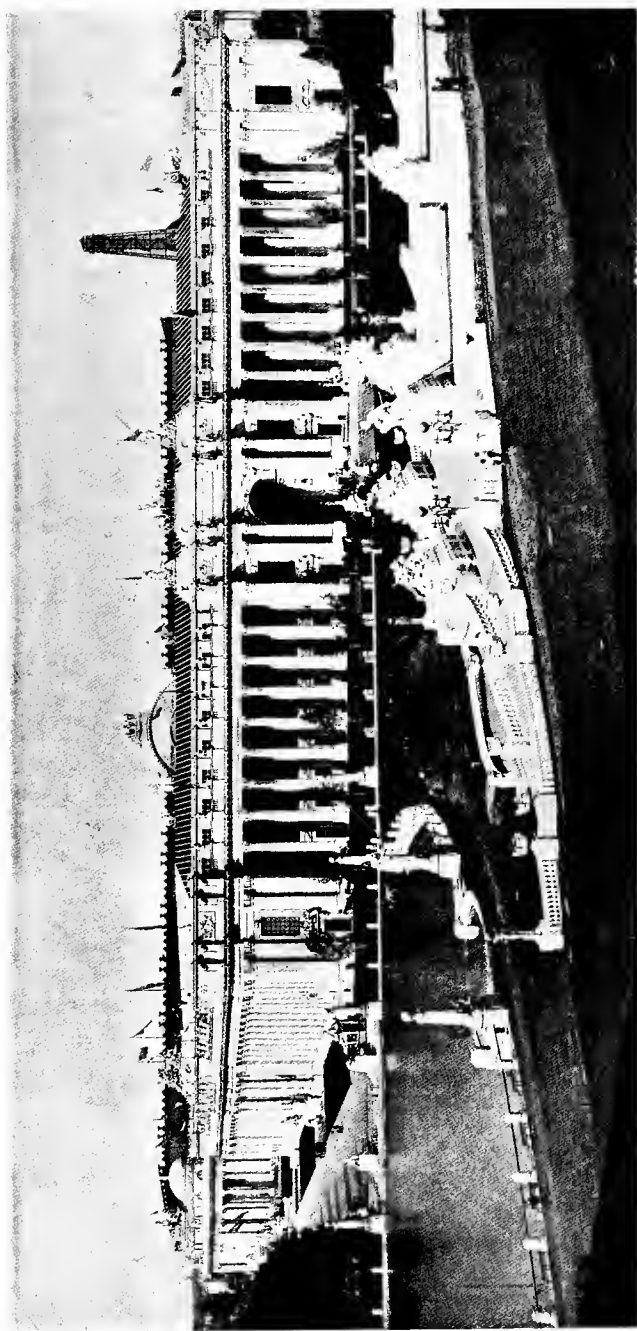


FIG. 20.—EDUCATION.

[To face page 38.]

X.—THE MANUFACTURES BUILDING.

THE architects for this building were Messrs. Carrère and Hastings, of New York. Upon reference to the general plan, it

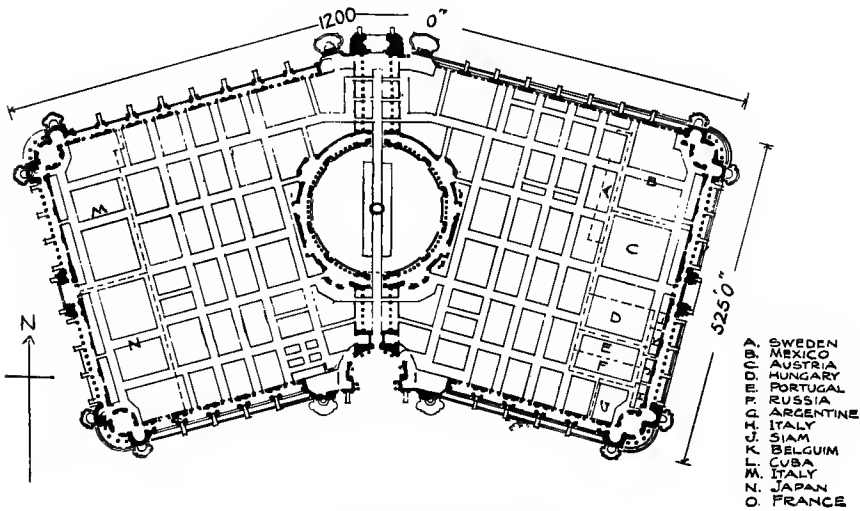


FIG. 21.—MANUFACTURES.

will be seen that this building corresponded with that of the Varied Industries, the north front being some 1,200 ft. in length, and the general width of the building being about 525 ft. This building lay very much in the main picture, as it was immediately on one's left as one approached from the principal entrance off the Lindley Boulevard.

As will be seen in Fig. 21, the architects planned corner entrances, which were very skilfully contrived. The Corinthian

order was generally employed throughout for the main columns, as will be seen from Fig. 22. The north and south fronts had five lofty arcades on each side of the central entrances, the piers to the same being ornamented with coupled Corinthian columns. In front of each pair of columns was a plinth projecting some 15 ft., upon which prone figure sculpture was effectively placed. A very finely-modelled cornice and pannelled frieze was used in the entablature to the main columns, the former being continued all round the building. The space between the columns and the main wall formed an effective loggia, and the openings in the main wall were treated with coupled Ionic columns. In execution the north front was marred, owing to the fact that the portion east of the central entrance was robbed of the loggia; consequently the effect of the arcading was to a large extent rendered nugatory.

The east and west fronts had the Corinthian columns standing free, and circular ornamentation and swags enriched the piers between the openings to the main wall behind them. The same treatment of sculpture upon projecting plinths was again employed in the interspace between every fourth and fifth column. This was not so happy an arrangement as to the north and south fronts, and might perhaps have been omitted.

The massive arched central entrances were very imposing, and the skilful introduction of the fountains, to the north and south fronts, as shown upon the plan at these points, was very effective. This method of treatment, moreover, was very ingenious, in that it drew one's attention away from the awkwardness of the breaks to these fronts. This was perhaps the most subtle method that was employed for this purpose. The simple domes over the corner entrances were finely detailed, and added very much to the general effect. The semicircular Mansard roof, with its well-modelled finials and ornaments, greatly assisted the skyline, and the sculpture



FIG. 22.—THE MANUFACTURES BUILDING.

[To face page 40.]

over the main entrances did its share in emphasising the same in no uncertain manner. The details generally throughout this building were very carefully considered, and mention should be made of the pierced balustrade over the Corinthian entablature, which in turn was surmounted by figure statuary. The moulded parapet to the main wall was also capped by boldly-modelled ornamentation.

This building suffered much less than the Education Building from lack of statuary, as only four pedestals were vacant—viz., those to the north and east entrances. The whole building was raised upon a stylobate of steps, which certainly helped to make it more imposing.

The internal circular court was again rendered abortive, owing to the fact that a large portion of it was used for exhibits.

As shown upon the plan, four columns (of the Ionic order) were used in each of the bays, coupled Corinthian columns being again employed to the entrances leading from this circular court to the main building. The cost of this building amounted to some seven hundred and twenty thousand dollars.

XI.—THE ELECTRICITY BUILDING.

THE architects of this building were Messrs. Walker and Kimball, of Boston and Omaha, who were the principal architects

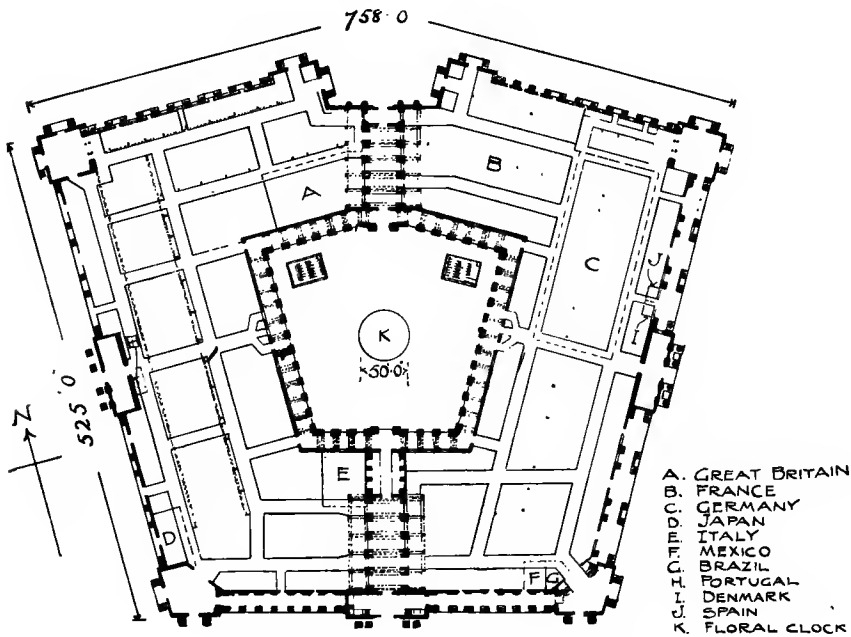


FIG. 23.—THE ELECTRICITY BUILDING.

of the Omaha Exhibition. It will be seen from the general plan of the Exposition (Fig. 2) that this and the Education Building occupy corresponding positions west and east, as viewed from the Festival Hall. They also had the same dimensions on plan—viz., 425 ft. to the east and west fronts, and 758 ft. to the north front.

It will be seen from Fig. 23 that the covered loggia extended only to the south and east fronts.

Fig. 24 is a section from the east front to the central court, which shows the construction. It will be evident from this that both the lantern system (*i.e.*, the monitors, as before described)

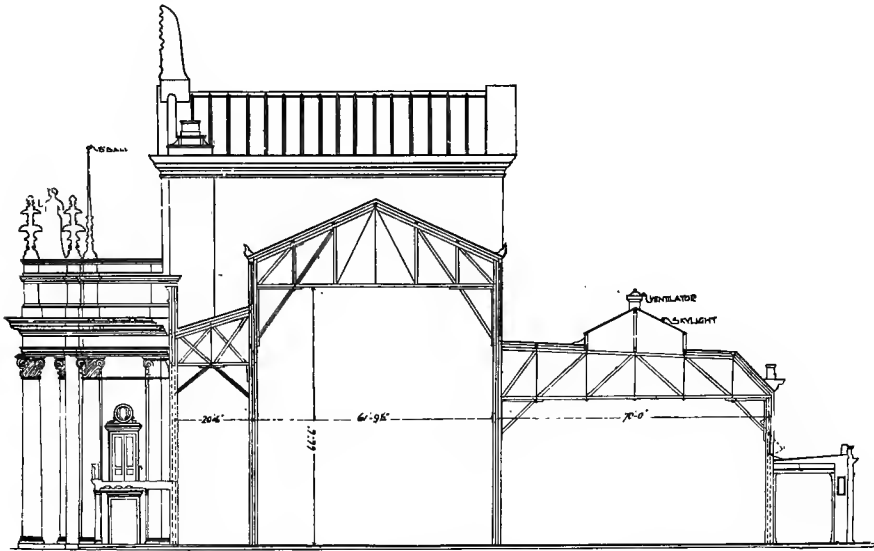


FIG. 24.—SECTION THROUGH EAST WALL, LOOKING SOUTH.
(Showing Main Gable of Electricity Building.)

and skylights were employed. Where light was not required in the clerestories, louvres were used for ventilation, which rendered this building one of the best ventilated at the "Fair."

The internal court followed the general outline of the plan, and it will be seen that this was interfered with less than in any other building set apart for exhibits; though, even in this case, toilet kiosks were erected, which deprived one of a satisfactory view of the same from the south, east, and west. The ambulatory to the

court had an open arcade, with twin Doric columns to the piers. The order was surmounted with open balustrading, the balusters of the same being moulded.

The entrances from the court to the building had raised triangular pediments. This internal court was undoubtedly effective, and the management, in July, 1904, placed a floral clock in the centre, as shown upon the plan (K, Fig. 23). This latter was, however, scarcely effective, because it could only be viewed from the ground level, and consequently hardly had the appearance of a clock at all. If one could have viewed it from a sufficient height to see it properly, no doubt the fact that the dial was 50 ft. in diameter, and that the hands weighed 500 lbs., might have interested one. There was another floral clock twice the size on the hill north of the Agricultural building (Fig. 36) ; but, this being placed upon the side of the hill, one could read the time from it at a distance, and it therefore served some useful purpose.

Externally the Corinthian order was employed throughout, as shown in Fig. 25. The four main entrances were accentuated by two Corinthian columns and raised triangular pediments, the latter having semicircular openings, and were surmounted by *antifixæ*. The corner entrances, as will be noticed, had a pair of Corinthian columns to the openings, and were emphasised by tower-like structures which above the level of the balustrade were reduced in size by the use of receding planes. They appeared, perhaps, to be a little too much broken up to be as effective as might have been desired. As will be noticed, the columns rose directly from the ground upon very shallow bases.

Reference to Fig. 23 shows the simple method of dealing with the break to the north front. It had the merit of simplicity, but was inclined to accentuate, rather than detract from, the awkwardness of this undesirable feature. This front had enormous three-

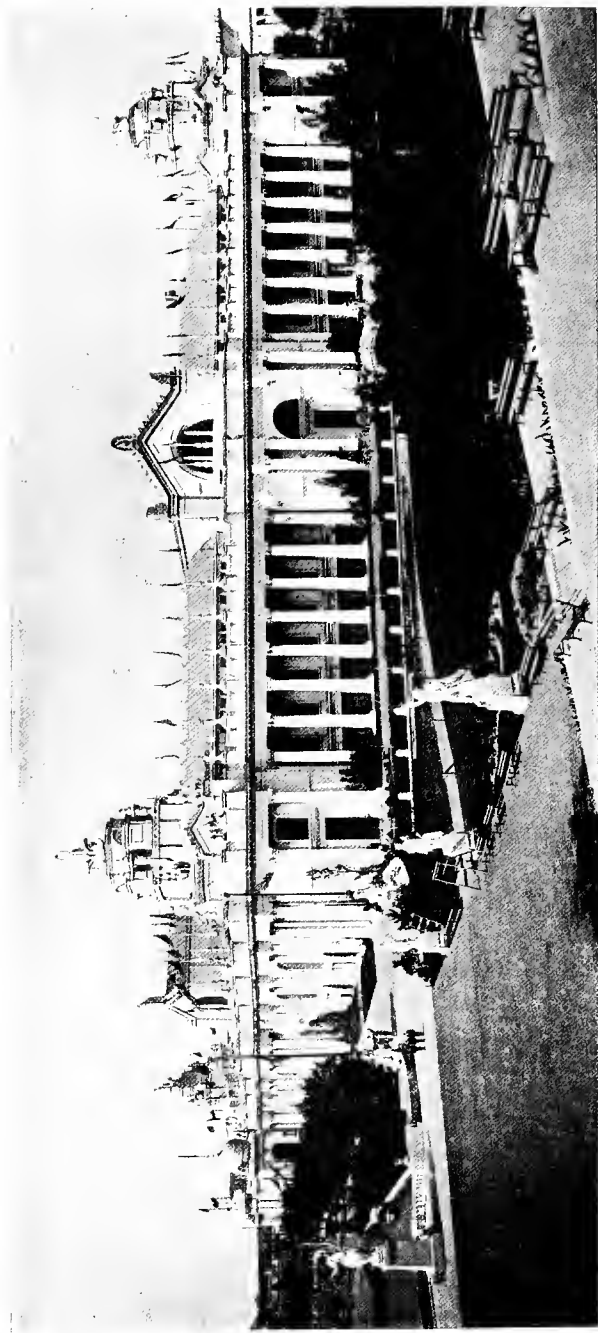


FIG. 25.—ELECTRICITY BUILDING.

[To face page 44.]

quarter Corinthian columns, and had the building been raised upon a stylobate of steps, this might have added to its dignity and importance.

The west front had large semi-circular-headed window openings, with twin Corinthian three-quarter columns to the piers. The east front suffered from lack of statuary to the plinths between the columns at the gallery level. The ambulatory had simple Doric columns supporting a gallery over the loggia to the ground floor, the balustrading to the former being of an open and effective design. This effect was broken by pairs of Corinthian columns being carried through the gallery, and the entablature of the main cornice being returned round them. The main wall behind the loggia had large and effective semicircular openings. There were some 290,000 sq. ft. available for exhibits in this building, and its cost amounted to about four hundred and fifteen thousand dollars.

XII.—THE VARIED INDUSTRIES BUILDING.

THE architects of this building were Messrs. Van Brunt and Howe, of Kansas City. This structure corresponded on plan to the Manufactures Building, and the contrast between them must certainly be gratifying to the layman, for out of the eight architects of the buildings that abutted upon the plazas, radiating from the central *motif* of the Festival Hall and cascades, five used the Corinthian order as the main feature of their design, and in addition most of the façades of each differed in treatment. While an architect would scarcely be likely, after walking round each of them, to mistake one for another, yet one frequently heard people mistaking them when trying to find their way about. This was more especially the case when some of them were the possessors of that smattering of knowledge which is so fatally dangerous in architectural matters.

Messrs. Van Brunt and Howe were, if memory serves one right, the authors of the Electricity Building at the Chicago Fair of 1893. If this is so, they are to be congratulated upon the use to which they have put their experience of the last eleven years.

As in the Manufactures Building, the dimensions, as shown upon the plan (Fig. 26), were 1,200 ft. by 525 ft. The architects again designed the familiar open court following the outline of the plan; but this followed the fate of the others, and, as will be seen by the plan, it was built over to a large extent. Externally, also, the covered loggia was omitted to the western and to part of the northern façades.

The Ionic order was employed throughout in the façades, and

in this respect it stood alone from the other buildings erected by the Exposition authorities. The order was placed upon a lofty rusticated base pierced by arches, which formed a screen to the loggia, and also permitted ingress and egress to the smaller entrances. Domes were placed over the central entrances to the north and south fronts, and cupolas also accentuated the corner

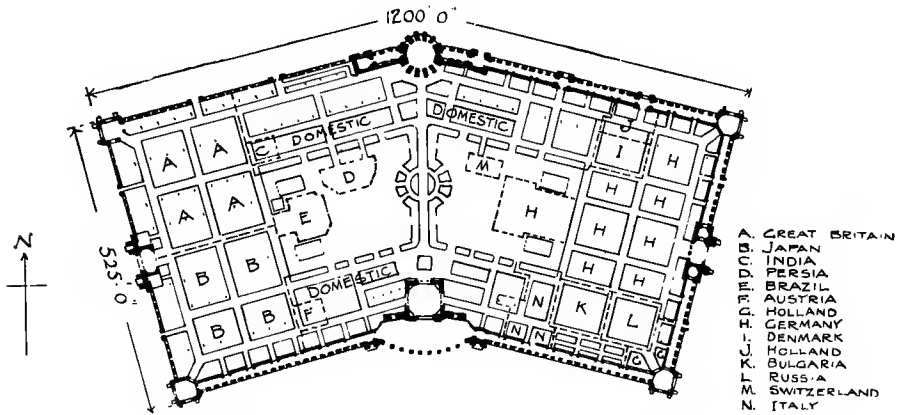


FIG. 26.—VARIED INDUSTRIES BUILDING.

entrances, which were simply treated with rusticated work, the pilasters having moulded capitals.

The central entrance to the east front was elaborated. The coupled Ionic columns on each side of the entrance were on a larger scale than those of the rest of the façade, and project as shown upon the plan. Above the order was a triangular pediment, the tympanum of which was finely modelled. Twin belvedere turrets crowned the main structure at this point, and the conical spires were at once pleasing and distinctive.

The west front was treated with Ionic pilasters, but the central entrance to this front had columns of the same order, and

statuary was centrally placed upon the cornice, over each column. The curved Mansard roof was effective, and was surmounted by an unusually solid cresting, which was treated with swags in the panels.

The break to the south front was treated in an unusual way. A screen, of free-standing Ionic columns, with a semicircular sweep, was adopted, and the main entrance was slightly recessed. This was a distinctly happy inspiration, and the statuary placed upon the balustrading surmounting the order formed an effective termination to this part of the scheme. The treatment of the break to the northern façade was successful, as the circular colonnade drew one's attention from the defect of the site, and, owing to the railway fence at this point, one could not get far enough away to observe the break in the frontage line. Had statuary been placed upon the bases east and west of the main entrance the illusion would have been even more complete.

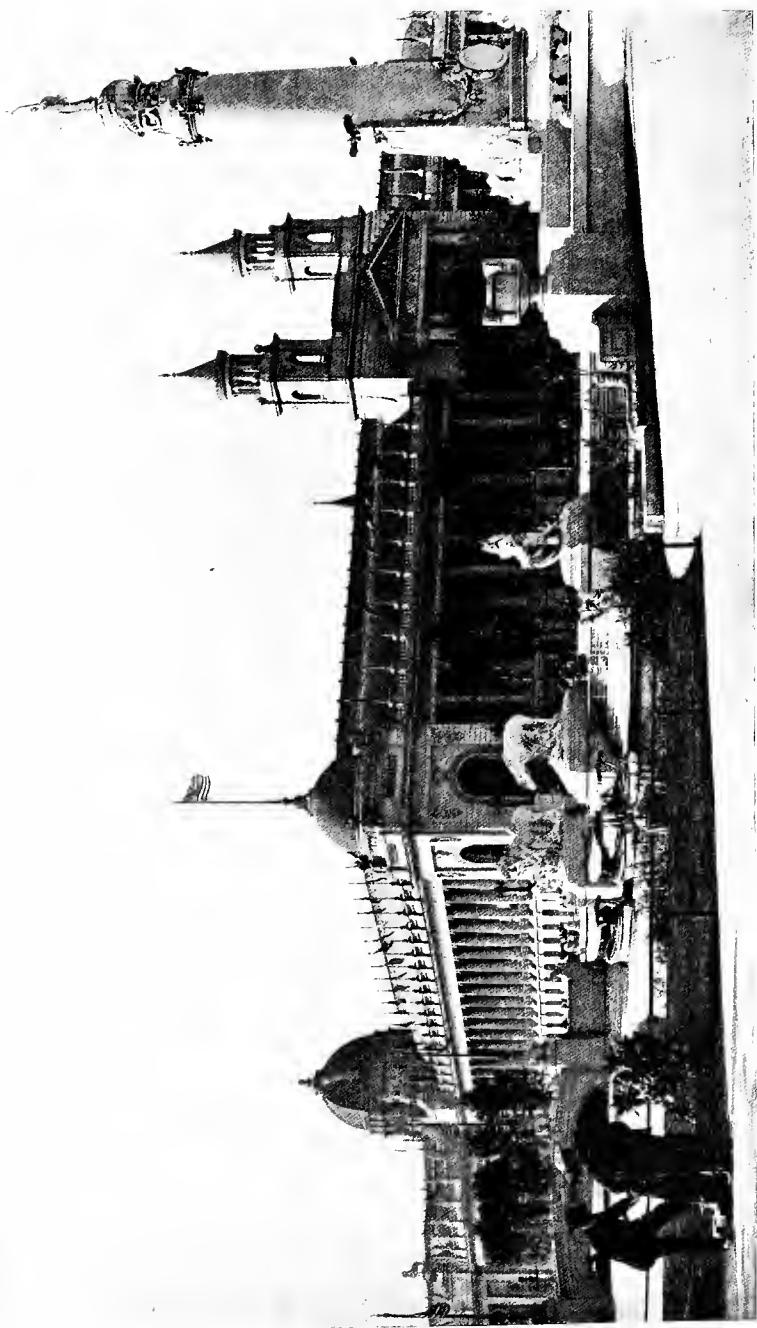


FIG. 27.—VARIED INDUSTRIES.

[To face page 48.]

XIII.—THE MACHINERY BUILDING.

THE architects for this building were Messrs. Widmann, Walsh and Boisselier, of St. Louis. The dimensions on plan were 1,000 feet by 525 feet, as shown upon Fig. 28. It will be seen that a portion of the parallelogram to the south-west was left without any building upon it. This was alleged to be due to the hill to the south-west. This was, of course, a grave defect in planning, as it robbed the southern front of its importance. This difficulty, however, could have been overcome by slightly reducing the length of the east front, thus setting back a little the east portion of this part of the south front. The main south front could then have been extended considerably further westwards. By this means a parallelogram could have been obtained without reducing the superficial area, and without increasing the cost of excavation. Fig. 29 is a half-section of this building looking west, which shows a slightly different method of construction to that previously described. Skylights are also shown instead of the customary monitors. Fig. 30 is a view taken from the north-east, and it by no means does any injustice to this building.

The main entrance to the south front, as shown upon the plan, consisted of five arched openings, advanced beyond the general building line, the end ones being marked by small belvederes. The angles were marked by two large towers, with the Corinthian Order to the lower storey surmounted with semicircular pediments. The upper storey had arched openings with a repetition of the Corinthian Order, but with triangular pediments. The curved Mansard terminations to the towers had an *œil-de-bœuf* to each face.

The semicircular-headed openings between the main and side entrances were flanked by rusticated piers, and it will be seen from the plan that this building had no covered loggia running round any of its elevations.

The east front had a large central feature containing five arched openings, having triangular pediments above the coupled Corinthian

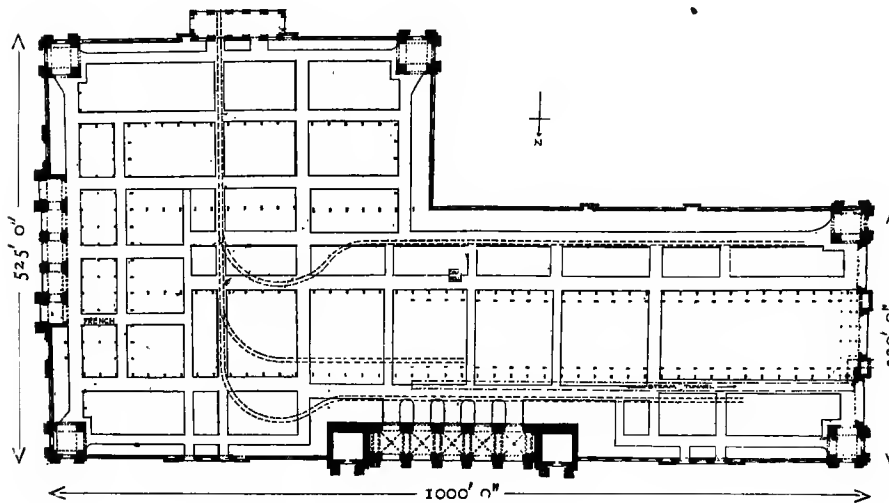


FIG. 28.—PLAN OF MACHINERY BUILDING.

columns to the end openings. The whole of this portion to this façade, including one window north and south, was carried above the rest of the building and was covered with a hipped red roof.

The north front, as shown in Fig. 30, had the same corner towers previously described. The central entrance had two massive square towers of similar treatment to those described, except that the central portion was elongated and a large cornice with consoles was added. The three central bays were crowned by

an attic containing modelled sculpture of engines in the end panels with a clock in the central one. The entrances between the central ones and those at the corners had coupled Ionic columns upon high plinths.

The main west front was treated with three large arches between

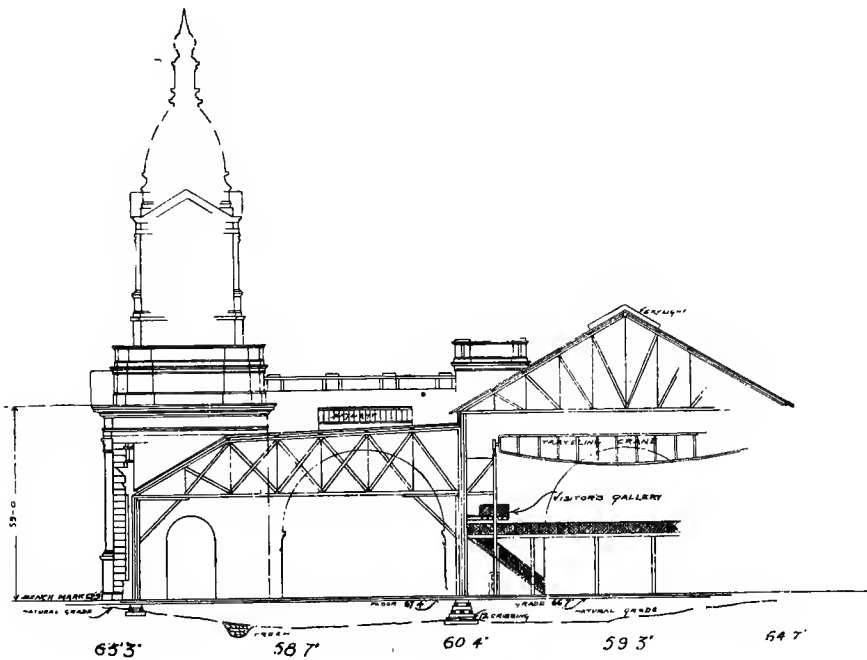


FIG. 29.—MACHINERY BUILDING.

the flanking belvederes, the two intermediate piers being rusticated, and the spandrels were ornamented with figure sculpture.

This front was marred by the fact that the boiler-house was placed within a few yards of it, so that it could not be seen properly.

This building gave one the impression of having been designed

in parts without, perhaps, sufficient regard to the design as a whole. The reiterated breaks and jumps, the varying heights of the roofs, and the general restlessness of the whole scheme did not add to the dignity of the composition ; though, if one took a portion only at a time, it generally appeared to be carefully detailed. No doubt the awkwardness of the plan considerably handicapped the architects. The cost without the sculpture was five hundred and eleven thousand dollars.

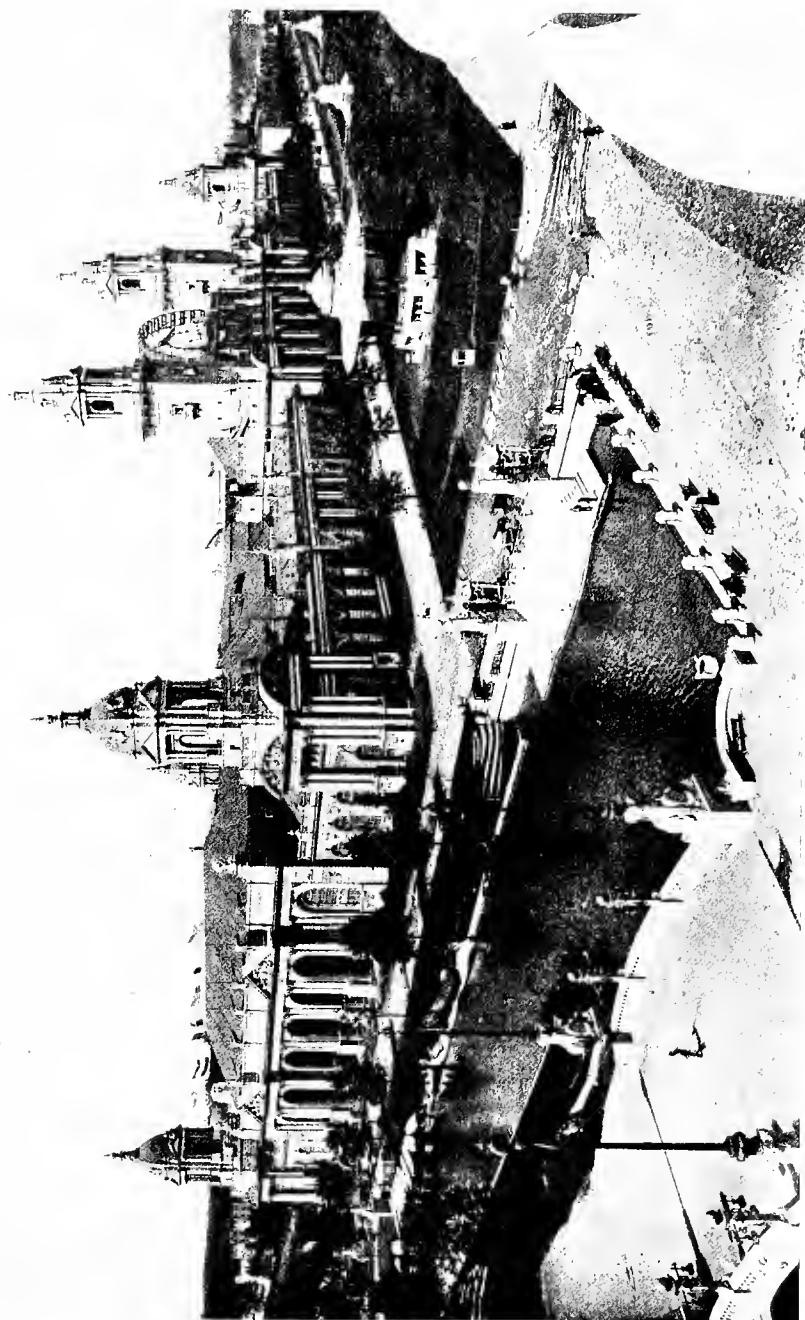


FIG. 30.—MACHINERY BUILDING FROM THE N.E.

[To face page 52.]

XIV.—THE TRANSPORTATION BUILDING.

THE architect of this structure was Mr. E. L. Masqueray, the chief of design in the Office of Works. It was the largest in the central plan as laid out by the committee of architects, covering over fifteen acres. This building, like that of the Mines and Metallurgy by Mr. T. C. Link, was of so distinctive a character that, having once seen it, one cannot fail immediately to recognise its features, and to remember the purpose for which it was used. As will be seen from the plan (Fig. 31), the building was rectangular, and no covered loggia was provided around the same. Four miles of tracks had to be provided, as shown, for the display of locomotives, Pullmans, and cars of every kind for the conveyance of passengers and freight.

The north and south fronts had a large arch at each of their extremities which was 64 ft. wide and 52 ft. high. This was very boldly treated, and had a large and striking dentil course to the moulded circular cornice. The latter was broken for the finely-modelled sculpture that crowned the arch. The buttresses on either side were massive in design, and their sloping lines gave an idea of the necessary strength to rebut the outward thrust of the arch (see Fig. 32). They were crowned with circular finials, seated statuary being introduced below such terminals. The rest of these façades was lighted by means of well-proportioned three-light windows between the square pilasters, and the walls were surmounted by a solid balustrade. It was intended to introduce colour treatment into these fronts, and this would undoubtedly have added to their effect. It was extremely hard on the architect

to cut this out, especially as in his original design the arch treatment accorded to the east and west façades was to have been reproduced to the other elevations. Nevertheless, so much does proportion count as the very foundation of design, that some 1,200 ft. of these repeated openings, plain as they were, barely became monotonous.

The east and west fronts had the three arches as their central

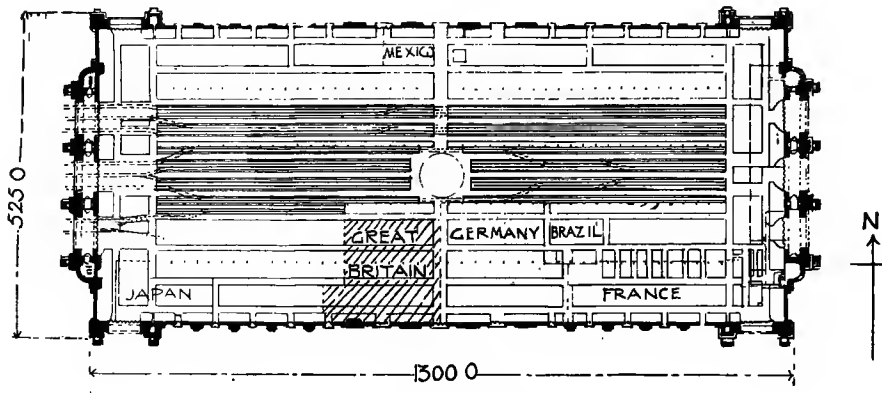


FIG. 31.—TRANSPORTATION BUILDING.

feature ; these were similar in design to those already mentioned, and were flanked by the large circular towers shown in the photograph. These were crowned by devices which have been likened to pepper castors, but these at least were indicative of the purpose for which the building was used. The style of these façades would probably be described as a free adaptation of Louis XVI., but it bears the imprint of a distinctive master ; and the curved Mansard roofs formed an effective background to the architectural features.

The manipulation of the plan was simple and effectual. The

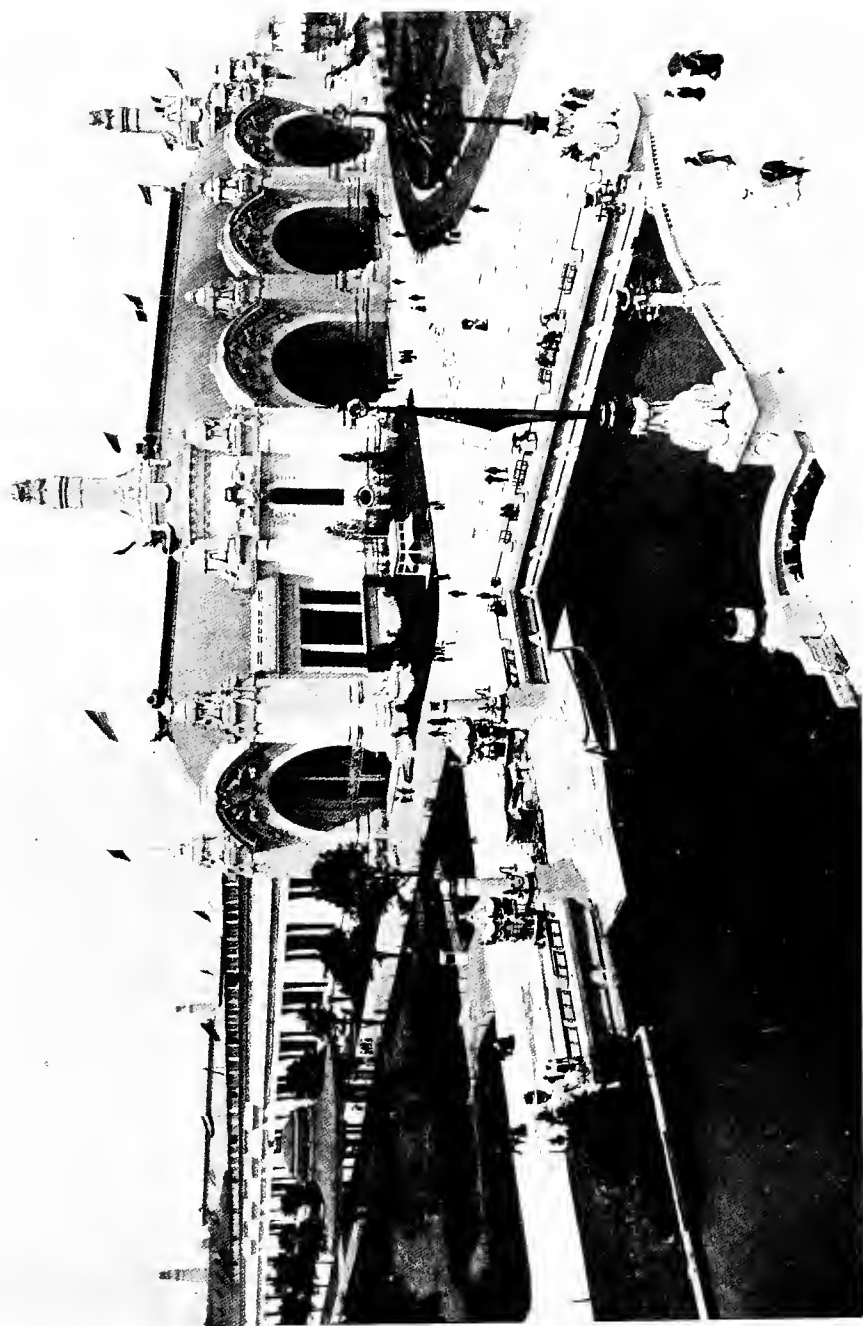


FIG. 32.—THE TRANSPORTATION BUILDING

[To face page 54.]

entire width was spanned by five trusses practically of equal span, one being shown in Fig. 33, the monitor system being used throughout. The toilet rooms were placed in the bases of the projecting

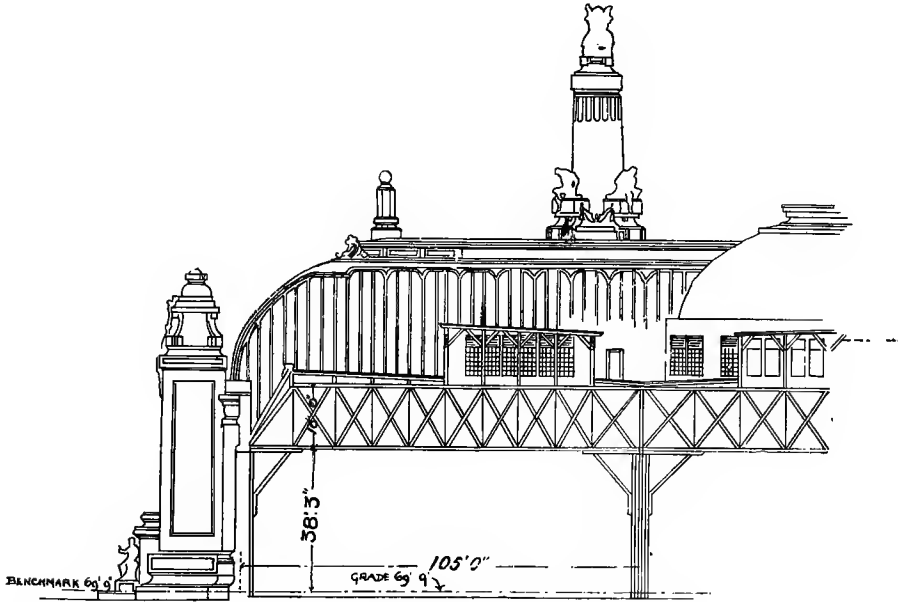


FIG. 33.

towers, and thus had the advantage of being lighted and ventilated externally.

One may perhaps mention that the idea of transportation was suggested by the carrying capacity of the enormous arches. This occurred to some people who found it necessary, in this exhibition, which contained some five hundred buildings, to fix the principal ones in their mind by some such association of ideas.

XV.—THE AGRICULTURAL BUILDING.

THIS structure was allotted to Mr. Isaac S. Taylor to design. Mr. Taylor was the Director of Works to the Exhibition, and the design was worked out by the staff at the Exhibition. It may here, perhaps, be repeated that the Division of Works were

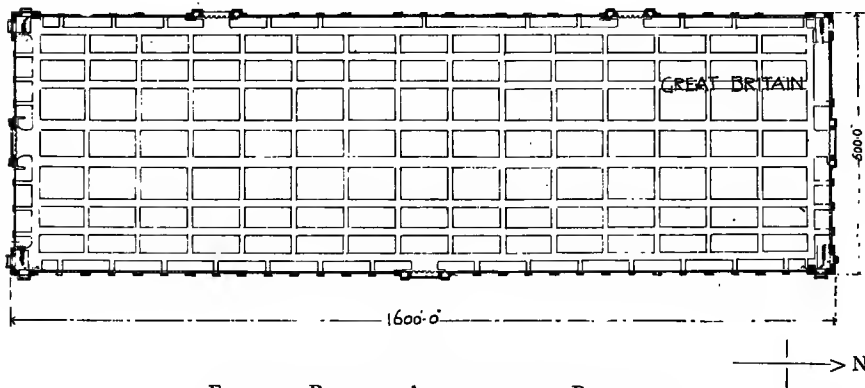


FIG. 34.—PLAN OF AGRICULTURAL BUILDING.

responsible for the construction of the whole of the buildings described, with the exception of the Government buildings.

This building had the distinction (if it be one) of having the largest dimensions on the grounds—viz., 500 ft. by 1,600 ft. It was rectangular, as will be seen upon reference to Fig. 34, and no attempt at a covered loggia was made. The only mistake in this structure was that there were too many vertical parts in it. To have eight rows in a space of 500 ft. was eminently ridiculous—four would have been plenty, from a constructional point of view; that is to say, if the side spans had been altered from 50

to 100 ft., as was the case in the central one, four rows would have been eliminated without any increase of cost, because the timber and labour saved in the uprights would have about balanced the extra cost of the trusses.

As erected, when one stood at the sides one's view was obstructed by a forest of unnecessary timber. This was a great pity, because in many other respects it was one of the best

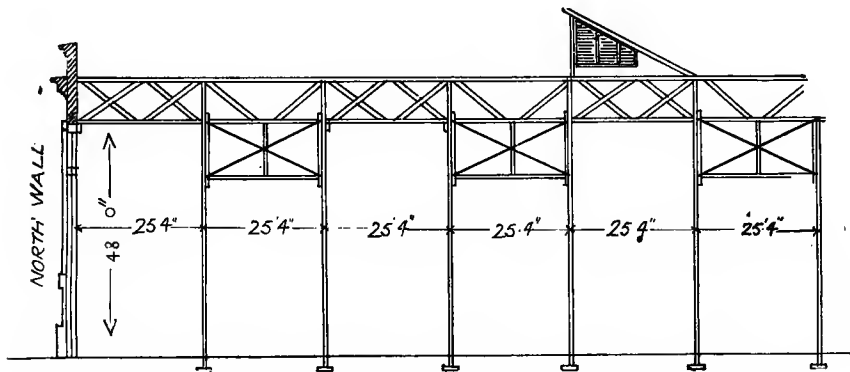


FIG. 35.—AGRICULTURAL BUILDING: TYPICAL LONGITUDINAL SECTION.

buildings, from an exhibitor's point of view, upon the grounds. It was good both in plan and section, and was thus easily subdivided into the spaces that were required to be let.

Fig. 35 shows a typical longitudinal section, and it will be noticed that the "saw-tooth" skylight admitted of lighting and ventilation, while keeping the southern sun out of the building. Externally this structure was kept very plain, the effect being entirely obtained from the proportion of the parts. An elaborate colour scheme was arranged, but had to be omitted, owing to financial considerations. This was a great pity, because Mr. Millet, who did such admirable work at Chicago in 1893, had been retained for this purpose, and, had he been enabled to carry it

out, this building might have vied with those of more ambitious mien for public attention.

As will be seen from Fig. 36, which is a view from the north-east, the north and south fronts had large central entrances, which were 52 ft. in width and 74 ft. high. The arch was flanked by massive piers, which were carried but a short distance above the roof, where they were treated with small circular terminations, supporting a flagstaff. The windows consisted of square openings, with a flat fillet round the outside. The cornice over the end windows was raised, with a semicircular sweep, and if the window-heads at this point had also been semicircular-headed it might have been an advantage, though they were no doubt left for the purpose of receiving appropriate treatment in the colour scheme.

The long façades to the east and west were broken up into bays, which were accentuated by piers, the latter being 100 ft. from centre to centre. As will be seen from Fig. 34, the west front had two entrances similar to those described above, while the east front had only one. The gardens which surrounded this building to the south, west and east were tastefully laid out by different exhibitors; while that to the north had a floral clock, as shown in Fig. 36. This building, being also raised upon a hill, was thus admirably situated from an architectural standpoint.

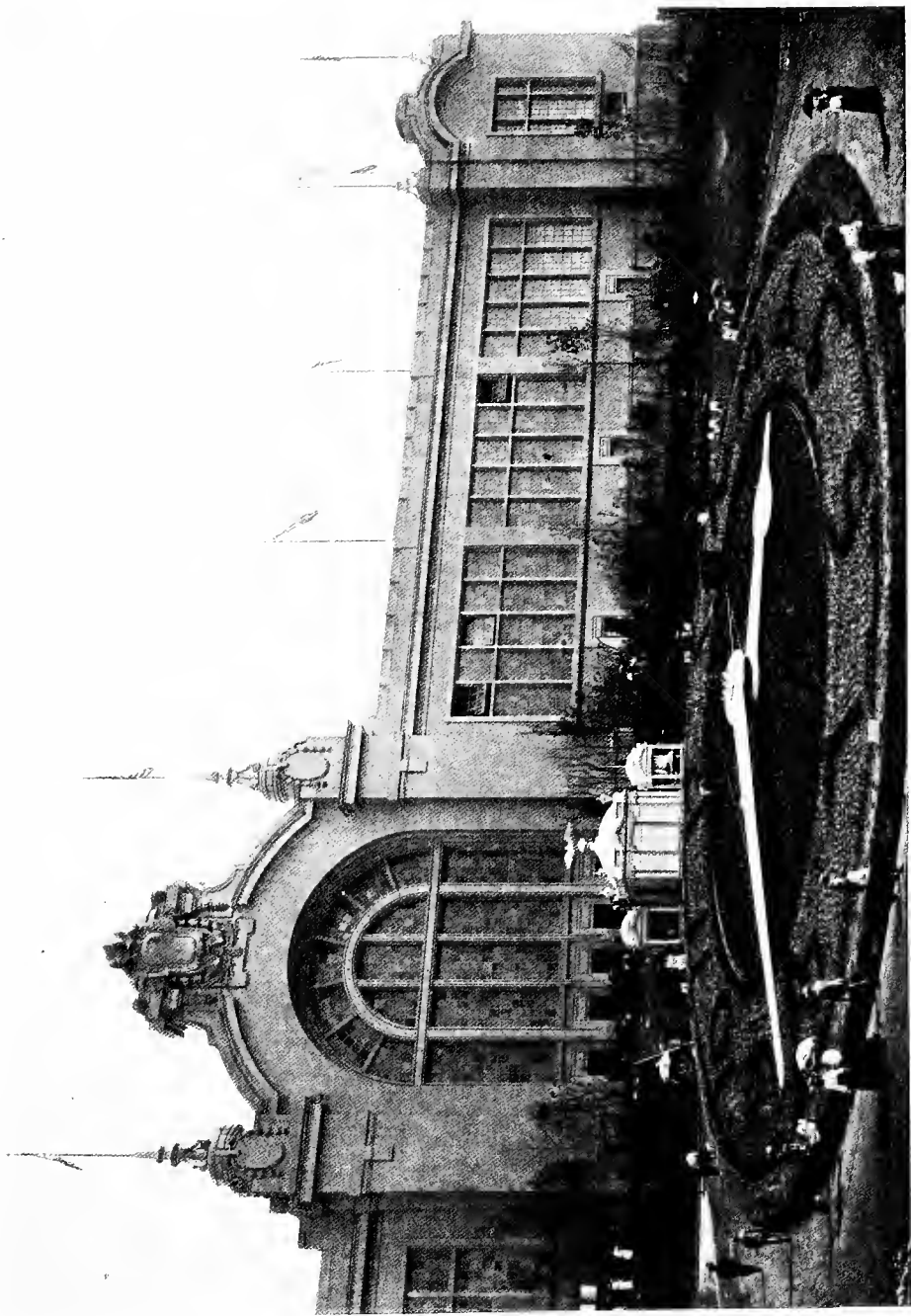


FIG. 36.—NORTH FRONT OF AGRICULTURAL BUILDING, WITH FLORAL CLOCK.

[To face page 58.]

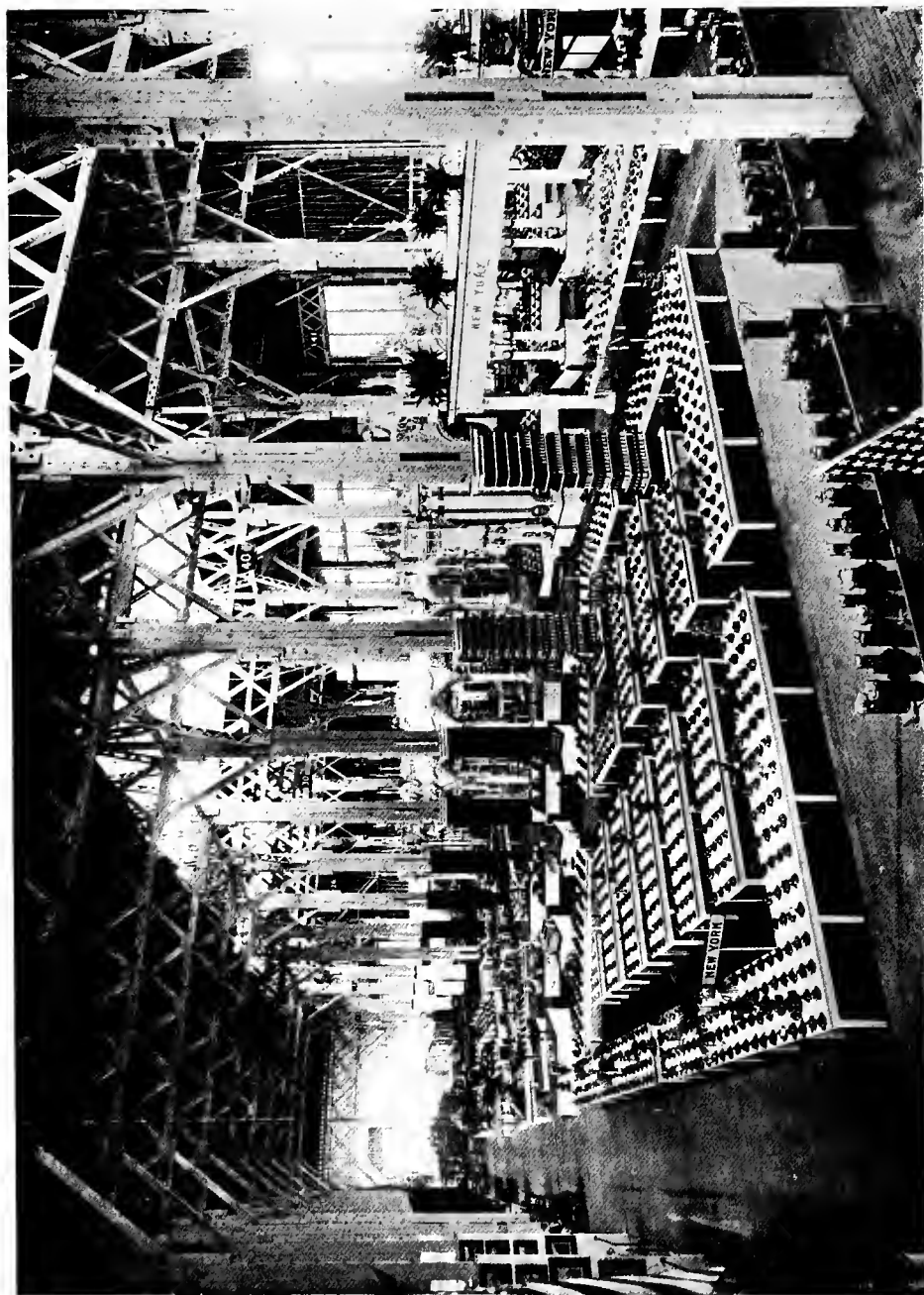


FIG. 37.—HORTICULTURE.

XVI.—THE HORTICULTURAL BUILDING.

MR. E. L. MASQUERAY was responsible as chief of design for this building, and also for the Forestry, Fishery, and Game Building, which is described in the next chapter. These erections were rectangular on plan, and thus do not call for special mention with respect either to this or to their construction, which followed that described in the preceding chapters.

The Horticultural Building had the same simple and effective treatment described in Chapter XV., but in this case the square-headed windows had not even a fillet around them, a fluted and decorative stringcourse being run above them. The central openings were also square-headed. They had a continuous pent-roof upon framed wooden brackets, and the piers at the angles were carried up and decorated in that effective French Renaissance method so peculiar to Mr. Masqueray. The corners of the buildings were treated with square towers—very simple, still very appropriate. The east and west wings were set back (as shown upon Fig. 2), and were used for the housing of tropical plants. Fig. 37 is a view taken in the Horticultural Building, which perhaps gives one a good idea, not only of the methods of construction employed, but also of the general internal appearance of most of the buildings.

XVII.—THE FORESTRY, FISHERY, AND GAME BUILDING.

THIS building again bore the impress of Mr. Masqueray's fingers (see Fig. 38). The low-pitched red roofing above the square windows and main entrance doors was effective, and helped to shelter this building from the southern sun. The triangular-headed windows to the end entrances were an innovation, and are perhaps open to criticism. But, from the point of view of a building for the housing of exhibits, little can be said against it, and perhaps it was a little nearer the "building in truth" maxim than many of the others.

The building was 300 ft. by 600 ft. on plan, and was placed upon a terrace 5 ft. in height. The cornice was 58 ft. from the ground, and the apex of the gables was some 74 ft. A colour scheme was also prepared for this building, but it shared the fate of the rest. Internally this building was fitted up with aquariums and fish-ponds. One of these was 40 ft. in diameter, and was stocked with sea-water fish, the water being brought daily for this purpose from the coast in a specially-constructed freight-tank.



FIG. 38.—FORESTRY, FISHERY, AND GAME.

[To face page 60.]

XVIII.—THE ADMINISTRATION BUILDINGS.

ONE can scarcely discuss the principal buildings at the World's Fair without mentioning the buildings belonging to the Washington University. The whole of the buildings to the west of the central *motif* of the plan, together with the 110 acres of land belonging to them, were leased to the Exhibition Company. They were all used for various purposes. The Administration Building is really to be used as the University Hall.

The *Busch Hall*, which is 292 ft. by 100 ft., was utilised by the staff of the Division of Works.

The *Cupples Hall* (No. 1), the dimensions of which are 263 ft. by 113 ft., was used as the Anthropology Building.

The *Cupples Hall* (No. 2), which is 207 ft. by 80 ft., was used as the headquarters of the Jefferson Guard, who were responsible for law and order in the grounds.

The *Workshop*, which is 207 ft. by 63 ft., was used as the barracks of the guard.

The *Power House*, of 120 ft. by 60 ft., was used for boilers and machinery.

The *Library*, which is 258 ft. by 144 ft., was used for the Educational Conferences.

The *Dormitory and Dining Hall*, which is 269 ft. by 150 ft., was used for housing teachers, etc., who attended the congresses.

The *Liggett Hall*, which is 90 ft. by 63 ft., was also used for the accommodation of teachers. This hall will be divided into houses and used as students' dormitories.

The *Physics Building*, 191 ft. by 68 ft., was used by the Board of Lady Managers.

The *Gymnasium*, of 180 ft. by 94 ft., was used for exhibits relating to physical culture. The athletic field, which has a fine track, was used as the stadium, where seats for 25,000 spectators were provided. The great Olympic games and athletic contests were held here, during the period of the exhibition.

The whole of the buildings are erected in what is meant for the Tudor period of English architecture. There is nothing remarkable about the planning of them, except that some appear to be rather far apart. They are frankly an attempt to copy the English collegiate type of building with modifications to suit American ideas. The Administration Building, which, as before mentioned, is really the University Hall, is 325 ft. by 118 ft.

It will be seen from Fig. 39 that the main entrance is under a massive tower, which is 77 ft. high. Octagonal turrets are placed at each corner, and rise above the main structure. The towers and turrets have stone battlemented parapets. Internally the entrance has a groined vault, 25 ft. by 38 ft., the moulded ribs and bosses to which are well executed. The east front between the turrets is somewhat elaborately ornamented with shields and a canopied niche. The building is composed of red Missouri granite with dressings of Bedford (Indiana) limestone. The granite is hammer-faced with two level beds, and four irregular faces, and is laid in courses called 'broken range rubble.'

It will be seen that battlemented oriel windows are placed at the first-floor level of the two wings. Hoodmoulds are worked over all windows. The granite, it must be confessed, does not harmonise well with the stone. The whole appearance of this façade in execution is hard and unsympathetic, and the skyline is unhappy.

Leading up to the terrace in front of the building are steps of cut granite, 35 ft. in width. The previous halls mentioned—viz.,



FIG. 39.—ADMINISTRATION BUILDINGS.

[To face page 62.]

those of Busch, the two Cupples, and Liggett—are to the west of the one illustrated, and form a quadrangle of considerable size. They are built of the same materials and in the same style. The buildings are fire-resisting throughout, concrete floors being used in lieu of the more familiar tile in the United States. A wide corridor runs through the centre of most of the buildings, on each side of which are the lecture rooms, etc.

XIX.—THE SCULPTURE.

PROBABLY the greatest surprise sustained by Europeans at the Columbian Exhibition at Chicago, in 1893, was due to the quality and quantity of the sculpture there displayed. It commenced an era for sculpture in the United States that probably is unique in its way. Allied to architecture, it may now be found in almost any building of importance that is being erected. Indeed, in New York City, some of the buildings seemed almost designed for the sole purpose of affording opportunities to display the works of the sculptor. The Appellate Division of the Supreme Court, at the corner of Madison Avenue and East Twenty-fifth Street, is a typical instance. This, of course, is running to an undesirable extreme, which the sound common-sense of the people in the States may, probably, be relied upon to check.

The sculpture of the Exhibition was designed on a magnificent scale. This was due to the fact that the buildings were larger, and the courts and avenues more extensive, than at any Exposition ever previously held.

Sculpture was rendered suitable and almost necessary owing to the predominance of the Classic style employed. The authorities were fortunate enough to obtain the services of Karl Bitter as chief of sculpture. His excellent work at Chicago in 1893 is well known, and since that time he has strengthened his position by various works as one of the leading American sculptors of the day.

Mr. Bitter familiarised himself with the *motif* of the scheme as settled by the committee of architects before attempting to formulate his plans for the execution of the sculpture commissions.



FIG. 40.—COLONNADE OF STATES.

[To face page 64.



FIG. 41.—APOTHEOSIS OF ST. LOUIS.

[To face page 65.]

The historic groups and figures were chiefly to be found in the avenues leading to the Festival Hall and the Cascades ; while the Colonnade of States to the south of the Cascades afforded an unrivalled opportunity of commemorating, in an allegorical manner, the States now composing the territories included in the Louisiana purchase. How effectively this was worked out may, to some extent, be imagined from the illustration (Fig. 40).

The Festival Hall and Cascades were treated as one composition (see Fig. 3 *supra*), and their design was intended to express the joy of the American nation at the progress of liberty westwards across the Continent of the United States. The Fountain of Liberty which formed the central feature was entrusted to Herman Macneil, and he worthily carried out the scheme as devised by Karl Bitter.

The side cascades, which were entrusted to Isidore Konti, represented the Atlantic and Pacific Oceans, which have come to be the eastern and western boundaries of the Republic, owing to this purchase.

Upon entering the grounds in the main avenue, called the Plaza St. Louis, the first object to arrest one's attention was the sculptural composition, called the Apotheosis of St. Louis (Fig. 41). Charles H. Niehaus was responsible for this equestrian statue. It was intended to represent the welcome which St. Louis expressed to all the world, and to commemorate the character in history from whom the city was named — *i.e.*, Louis IX. of France. This was, perhaps, one of the best pieces of statuary of this nature yet produced in the American continent, and was the result of careful study of the historic requirements.

St. Louis was represented as seated in an heroic and dignified attitude, clad in mediæval armour. His charger was caparisoned as in the days of chivalry, and the whole composition was wonderfully impressive and cleverly executed.

Mr. Bitter was himself responsible for the sculpture to the Louisiana Purchase Monument—a view of which is shown in Fig. 4, and which has been described in Chapter II. The allegorical figures at the base represented the Missouri and Mississippi rivers, and a view of the former is shown in Fig. 42.

It is impossible to even mention the names of the sculptors or their principal works at the Exhibition. Perhaps, however, some idea of the enormous scope of their work to the buildings alone may have been gathered from the illustrations which have preceded this chapter.

It may be of interest to note the procedure that was followed with regard to the execution of the work. All artists submitted scale models to Mr. Bitter, which were then carried out full size under his direction. A suitable workshop near New York City was utilised for this purpose, situated close to a main railway line. Enlarged copies of the models were here made by a pointing machine invented by R. J. Paine. This is a purely mechanical device, and was worked by practically unskilled labour, but provided excellent opportunities for study for younger sculptors, and this was taken advantage of by them.

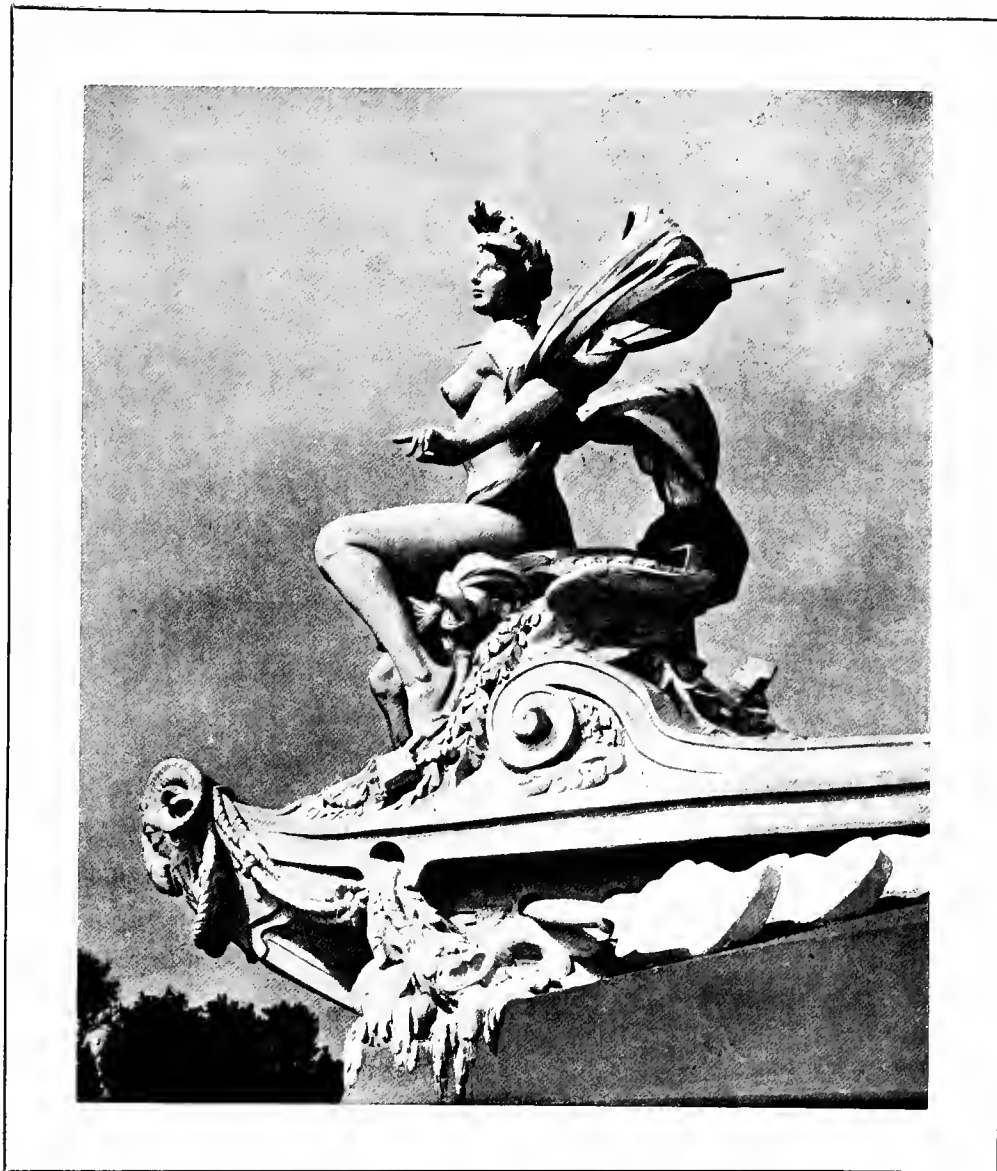


FIG. 42.—LOUISIANA PURCHASE MONUMENT.

ALLEGORICAL FIGURE.

[To face page 66.

XX.—THE BRITISH SECTION : (A) THE ROYAL
BRITISH PAVILION ; (B) EDUCATIONAL EXHIBITS ;
(C) ART SCHOOLS.

(A) THE ROYAL BRITISH PAVILION.—The Commission, whose architects were Messrs. Ernest George and Yeates, decided to erect a British pavilion, the design of which was to be founded upon the Orangery of the Royal Palace at Kensington, which was designed by Sir Christopher Wren. This was a happy inspiration in many ways, as the French erected a replica of the Grand Trianon at Versailles ; and the Germans built their pavilion on the lines of the Castle at Charlottenburg. Thus an interesting comparison could be made between the three buildings. The Orangery itself was used as the *motif* for the eastern front of the building, which was erected on the four sides of a quadrangle. (See Fig. 43.)

The accommodation for the staff was provided for in the southern wing, the northern wing being devoted to rooms decorated in the prevailing style at that period. The north side of the court was formed by a colonnade, the Royal Arms being above the central opening. The character and details of the Orangery were observed throughout this additional work as much as possible. Messrs. Trollope, of London, were responsible for erecting the building, and were much hampered by strikes during its construction. It was undoubtedly the best-built pavilion upon the grounds, and negotiations were made for its purchase by the Washington University for a clubhouse for the students. The walls were composed of Portland cement upon metal lathing, and the whole

building was very satisfactory. The only criticism that might fairly be made is with reference to the colour and texture of some of the brickwork.

The gardens were a great feature, and caused, perhaps, as much astonishment and interest as any of the side shows. The idea was to lay out a formal garden based on the lines brought over to England by William of Orange. Great credit is due to W. Goldring Ogden for the success that attended his efforts in forming the garden. The shrubs, trimmed to represent various animals and birds, and the flower-beds were well executed, and the scheme generally was remarkably good, considering the short time at his disposal.

The Jubilee presents to the late Queen Victoria have been exhibited so often that their display calls for no special comment. We will now discuss very briefly the Education and Art sections of the British exhibits in the order in which they appeared in the catalogue.

(B) EDUCATION.—The committee endeavoured to restrict their efforts to the most representative features of British educational methods and results. The exhibit of the Royal College of Art was good, especially that relating to etchings executed by their students. The work executed in the elementary drawing classes of the London School Board was wonderfully varied, and showed that excellent methods must be employed by their teaching staff. The social and economic section was also housed in the Education Building. The charts prepared by the commercial, labour, and statistical departments of the Board of Trade were remarkable, and included such really important subjects as fluctuations in wages, and the consumption of beef, mutton, pork, and bacon by the families of agricultural labourers. The analysis of the expenditure of trade-unions was also given. Mr. Charles Booth

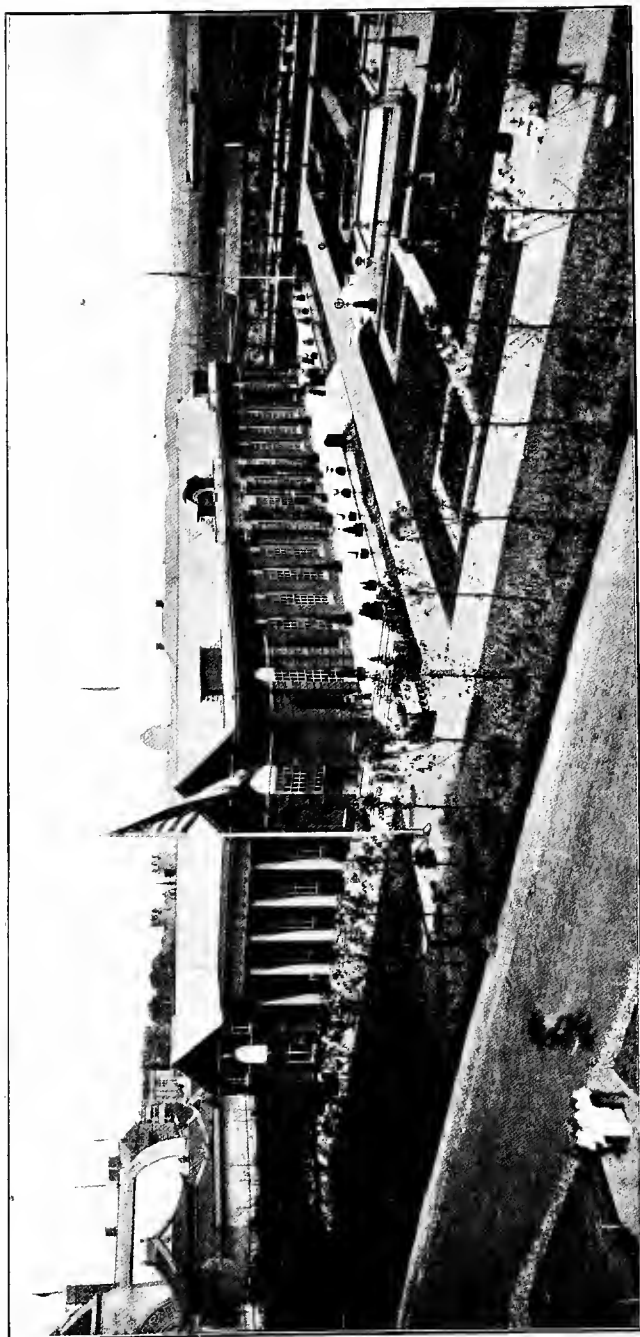


FIG. 43.—BRITISH ROYAL PAVILION.

[To face page 68.]

also exhibited in this section his social map of London, which, by means of colours, attempts to indicate the social condition of the inhabitants of each street.

(c) ART.—This was perhaps quite the best of the British exhibits, and probably no other foreign country could vie with Great Britain in this department. The collection was of so varied a nature that almost every phase was covered by it. One can scarcely hope ever to get such a collection brought together again. Sir Lawrence Alma-Tadema was represented by "The Coliseum," "Caracalla," and "The Shrine of Venus." "The Dream of Launcelot" and "Flamma Vestalis" were the pictures of the late Burne-Jones. The Hon. John Collier had "The Prodigal Daughter," that attracted so much attention at the Academy a few years ago. A. S. Cope had two excellent portraits. Frank Dicksee's "Belle Dame sans Merci," as usual, drew a crowd of people. Herbert Draper's "Sea Maiden" looked as dry as before. Alfred East and Luke Fildes also had pictures. The late Charles Furse had his mammoth picture, "The Return from the Ride," in which a country gentleman in white breeches and boots is bestriding an enormous black horse. "Boulter's Lock," by E. J. Gregory, always draws due attention with its realistic brightness and colour. Herkomer had a portrait of the Duke of Somerset and two other contributions. Holman Hunt's "May Morning" was here, as was also the "Seamew's Nest," by J. C. Hook. The memory of Lord Leighton was kept green by the exhibition of "Perseus and Pegasus," "Perseus and Andromeda," and "Clytemnestra." G. D. Leslie had "The Lily Pond" and "In Time of War," the latter infinitely the better of the two. The well-known picture of "God Rest Ye, Merry Gentlemen," by Seymour Lucas, drew one's attention. "Chill October," the masterpiece of the late Sir J. E. Millais, every touch of which

was painted from nature, attracted much attention to the exclusion of the five other works of his in the exhibition. Orchardson had "The Borgia" and two portraits. Parsons was represented by "The Brown Autumn." Sir Edward Poynter had "The Greek Dance," "The Catapult," and "The Cave of the Storm Nymphs." Henrietta Rae had our old friend the "Sirens." Perhaps the best portrait shown was that of "Old Tom Morris," by Sir George Reid. Sir W. Richmond had "Venus and Anchises." Sant had the Head of Napoleon, and a scene from "Enoch Arden." Harold Speed's "Griselda" attracted attention. Marcus Stone and G. A. Storey each had a picture. J. W. Waterhouse and Sir E. Waterlow had pictures; there were three by the late G. F. Watts; and last in the catalogue of the oil colours was "Defendant v. Counsel," by W. F. Yeames, which attracted some attention in the Academy two years ago.

The water-colours were also well selected, and included works by such well-known artists as Burne-Jones, Sir John Gilbert, Alfred East, Charles Green, E. J. Gregory, Herkomer, Yeend King, Lucy Kemp-Welch, North, Parsons, Poynter, Waterlow, and Woolen. The drawings, etchings, and engravings were also quite representative, and were all well hung.

Amongst the sculpture were works by Brock, Frampton, Goscombe John, Lord Leighton, Roscoe Mullins, Pomeroy, and Pegram.

Architecture included some good contributions from Sir Rowan Anderson, Maurice B. Adams, John Belcher, the late J. F. Bentley, Reginald Blomfield, Bidlake, Basil Champneys, Guy Dawber, J. F. Doyle, A. H. Hart, T. G. Jackson, E. W. Mountford, Beresford Pite, G. H. F. Prynne, Harrison Townsend, Sir Alfred Waterhouse, and Sir Aston Webb.

The Applied Arts section included work by the Guild of

Handicraft, W. A. S. Benson & Co., the Birmingham Guild of Handicraft (Ltd.), work by Walter Crane, Countess Feodora Gleichen, and many others; and it is to be hoped that this collection, though small, may be the forerunner of many more exhibitions. Great Britain is striking out for herself in an original and decisive way in recent years in the applied arts, and if sufficient application is shown and encouragement given, she may yet lead the way in this branch of art, which also embraces the resources of science.

XXI.—THE BRITISH SECTION CONTINUED :

(D) LIBERAL ARTS ; (E) MANUFACTURES ; (F) ELECTRICITY ; (G) TRANSPORTATION ; (H) AGRICULTURE ; (I) FISHERY AND GAME ; (K) HORTICULTURE ; (L) MINES AND METALLURGY.

(D) LIBERAL ARTS.—Next to the Fine Arts section, perhaps this was as representative a collection as any of the others. Henry Graves, Colnaghi, and Thomas Agnew had many well-known etchings, mezzotints, and photogravures. The bookbinding and books and publications subsections also repaid investigation. The historical photographs taken and exhibited by Sir Benjamin Stone formed a permanent pictorial record of current national life and history, and the educational value of these productions is considerable. Most interesting also were the maps exhibited by the Intelligence Department of the War Office. What a pity that these African maps were not prepared some years before the Boer War ! The Royal Geographical Society exhibited most interesting maps, publications, and instruments for geographical surveyors. The Cretan, Egyptian, and Palestine Exploration Funds were responsible for maps and various drawings. Stanfords also were represented by a good collection of the former. Sir Howard Grubb, of Dublin, had an excellent case of instruments of precision. Stanley, Newton, and J. J. Griffin also did themselves justice in this department. The Royal Mint had a wonderful collection of coins and medals. Some of these, by the way, were stolen after the exhibition was opened. The civil and military

engineering models, plans, and designs were a fascinating study, and included such models as the Eddystone lighthouses and the Assuan dam. The chemical and pharmaceutical arts were also well represented. Indeed, the professor of chemistry at Washington University referred his students to the exhibits as very modern samples, and adopted the catalogue of the Royal Commission as an advanced text-book of technical chemistry.

(E) MANUFACTURES.—These were housed in the Varied Industries Building. John Hills, of Oxford Street, had an excellent collection of genuine old Sheffield plate, which was very refreshing after the numerous imitations in this building. He also showed a fine old Celtic cross dated 1327, blackjacks of the Cromwellian period, and some fine pieces by the well-known Paul Storr of George III.'s period. The Lord Chancellor's purse of this reign was also exhibited, as were several loving cups of that good design that relied solely for effect upon form and proportion.

Messrs. Doulton had a large space in this section, and their *rouge flambé* pottery drew much attention. They have at length rediscovered the secret of this pottery, and are making the most of it. They also had some excellent forms in their salt-glazed stoneware. Minton, Hollins, and others also did well in this subsection. Platt Brothers, of Oldham, had a good exhibit of cotton and spinning machinery all in operation. Singers, of Killbowie, on the Clyde, showed machines varying from one that sewed boots to one that embroidered six handkerchiefs at a time, both being electrically driven.

There was a good exhibit of British laces and embroideries, to which decorative textiles were subsequently added. The general idea with regard to this was to illustrate the employment of these various textile fabrics for definite purposes, rather than merely to display them as samples.

The Royal School of Art Needlework, South Kensington, displayed some excellent work of varied designs.

The laces represented all the principal centres for which Great Britain is noted, including Devonshire, Buckingham, and the cities of Nottingham and Limerick.

George Trollope & Sons exhibited some historical examples of furniture, which were housed in the British Royal Pavilion. The Banqueting Hall was furnished with some fine reproductions of the Queen Anne period. Two rooms were fitted and furnished in the Elizabethan and Georgian styles, and the work of the Brothers Adam was reproduced in another. The furniture of this latter was in the Sheraton style.

William Birch, of Euston Road, had the largest individual furniture exhibit at the fair. Hardwood seats, cabinets, and chairs of good design were exhibited. John Hanamaker, of New York, was so much impressed by this exhibit that he purchased the whole collection.

Mr. Alan S. Cole, C.B., organised a unique collection of laces, embroideries, and decorative textiles, which were well arranged in a court of their own.

Messrs. Waring and Gillow had a pavilion inclosing suites of decorated and furnished apartments, also the actual fittings and furniture from the R.M.S. *Ophir*, as used by the Prince and Princess of Wales. This pavilion was really too much boxed in to be effective, and parties were only taken round at intervals, so that very few people ever saw it. This is always a mistake, from an exhibition point of view. The exhibit could have been so arranged that everyone could see it without a guide, which latter is ridiculous for this class of exhibit.

(F) ELECTRICITY.—F. B. Behr had a working model of the monorail and high-speed car as authorised for the railway between

Manchester and Liverpool. The General Post Office had a very complete exhibit relating to telegraphy and telephony.

(G) TRANSPORTATION.—The British railways were fairly well represented, and their exhibits included a model of the Forth Bridge. H.R.H. the Prince of Wales exhibited a model of H.M.S. *Albion* and the R.M.S. *Ophir*. The Cunard Line and Swan, Hunter & Company also exhibited some excellent models, and those of the latter included the floating dock for Bermuda, with a lifting power of 17,500 tons.

(H) AGRICULTURE.—Joseph Baker, of Willesden, had a model working bakery which was much patronised. Their speed-reducing gear is also worthy of mention. The Lawes Agricultural Trust had diagrams and illustrations as to results of experiments at Rothamstead.

(I) FISHERY AND GAME.—This consisted principally of guns, and Purdey, Cogswell & Harrison and Holland & Holland had good exhibits.

(K) HORTICULTURE.—The Board of Agriculture showed interesting maps. Carter, Cutbush and Sutton had instructive exhibits.

(L) MINES AND METALLURGY.—The Home Office (mining department) organised a useful exhibit of minerals and stones from all parts of the country. The Board of Education had most instructive maps and models, mostly from the Geological Museum, Jermyn Street. The Le Neve Foster collection of building stones, etc., was also well displayed. The Department of Agriculture for Ireland had a comprehensive and well-arranged exhibit of Irish minerals and building stones. The British South Africa Company had cases showing the different ores found in their territory.

Altogether, one can fairly say that Great Britain made a creditable display in the various departments. Though one was

naturally disappointed in some sections, in others one was pleasantly surprised. In the Fine and Applied Arts sections she surprised the Americans, and great credit was due to Messrs. R. S. Hunt and A. A. Longden, who were the representatives of these committees, for their skill and care in these departments. Captain P. H. Atkin, as the representative of the Education Committee, was also to be congratulated upon a small but excellent exhibition. The entrances and inclosures of the British section were fortunately of a uniform design, and the inclosures consisted of rows of well-modelled Ionic pilasters and entablatures, resting upon square bases, which were some 12 ft. centre to centre. The floor space between the pilaster bases was left clear up to the underside of the architraves. The entablature was of simple design with an egg-and-dart moulding to the cornice. The entrances were not so happily designed, and the less said about them the better.

The success of the British Section is no doubt largely due to the fact that Col. Watson, R.E., C.B., C.M.G., was wisely appointed as Commissioner-General. This distinguished engineer officer was always at his post when other commissioners were not to be found; moreover, his organising ability enabled him to have the whole of the British section open, and the catalogue printed by the opening day—Britain being the only country that can lay claim to this organising feat! Col. Watson, happily, was entirely free from official red tape, which was not to so marked an extent the case with some of the other foreign commissioners, and which with them sometimes led to personal inaccessibility, the shutting up of buildings on certain days, insistence upon the production of visiting cards, and other annoyances irritating to visitors whose time was often wasted on such needless routine.

XXII.—CONCLUSION.

THE virility of the management was indeed well tested by the fact that over two hundred strikes impeded the progress of the buildings. Notwithstanding this they carried out their enormous contracts within a period of less than three years.

In comparing this wonderful Exhibition with previous great International Exhibitions, the thought, naturally occurs to one as to what may be learnt from this vast undertaking. This is more especially the case as, owing to the enormous financial loss entailed by the Exhibition, it is extremely improbable that people will again be found to invest their money in Exhibitions to anything like the extent that they did at St. Louis.

It does occur to one that the waste entailed by the destruction of these buildings after the expiry of the Exhibition might somehow or other be obviated to some extent. As mentioned previously, the Washington University Buildings and the Fine Art Building will remain ; but would it not have been possible to have designed some of the others for permanent public buildings, hospitals, or even factories ; or in such a manner that they could have been altered internally for some such purposes ?

The exhibition of the future will probably be organised for single and specific purposes, and not upon a large general scale.

It was generally agreed by European critics that the Chicago Exhibition of 1893 was too vast an undertaking to be really satisfactory in all its details. How much more does this apply to St. Louis, which was double the size !

The fatigue entailed in seeing the Exhibition was simply enormous, and the glare of the buildings rendered smoked glasses an absolute necessity. Even so the ambulance was kept steadily employed conveying prostrate visitors to the hospital provided for them.

The fact is that each building alone was an exhibition in itself. For instance, to see every exhibit in the Agriculture Building alone entailed a promenade of over nine miles.

If the original idea of the authorities had been carried out, galleries would have been constructed to all the buildings, and it is a tribute to the common-sense of the Division of Works that these were admitted to all the buildings. Perhaps one of the most surprising facts of all the wonders of the World's Fair was that with all the inventive genius at the disposal of the American Race, so few original architectural efforts were made. The architects of the Mines and Transportation Buildings alone made any attempts at conceiving original designs. The first named received his education in England, and is practically a Britisher; the other is a Frenchman!

The Exhibition furnished an opportunity for experimental architectural work, as the results were to be torn down at the end of the year; yet so thoroughly has the Beaux Arts captured American architects that none could get away from its toils even in erecting a temporary building. It is curious that the dream and ambition of every architectural student in the States is to go and study their art in Paris. And this great fetish is carried to such an extent that a "Beaux Arts" Society has been established in New York for such as have studied thereat.

It is perhaps quite true that nothing fundamentally novel in architectural design can be devised that would be satisfactory, but still surely merely slavish "copyism" should be strenuously

avoided. We require no new alphabet to our language ; but that is no reason why we should express our thoughts in the set style of any particular book, however classic its rendering.

The one prevailing idea amongst Americans of all classes is to have, or build, the "biggest thing on earth," and to claim it whether they have it or not. If they would impart a little more thoroughness and a closer study of detail into their ideas, a more complete and harmonious creation would be the result. As examples of what is meant, one may perhaps mention that the Model Street was execrably paved, the Hospital was placed next to the vibrating Automobile-shed, and at one of the entrances to the Exhibition one was almost compelled to go on all fours under a railway-track to get to the turnstiles.

One must, however, admit that destructive criticism of a vast undertaking like this Exhibition is superlatively easy. One cannot but admire the pluck, the genius, and the overwhelming energy that was bestowed on it, and many thousands of people were enabled to gain the most useful knowledge through the instrumentality of the promoters of this Exposition. Every day one could see earnest people taking notes of machinery and goods that would be useful to them in their business ; and this was perhaps more especially apparent in the Agricultural Building, where intelligent farmers of the Western States studied improvements in plant, machinery and methods of cultivation in a manner that would have considerably astonished the tiller of the soil on this side of the Atlantic.

